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PROCEEDINGS
OF THE
PATHOLOGICAL SOCIETY
OF PHILADELPHIA

NEW SERIES, VOLUME XVIII
OLD SERIES, VOLUME XXXVI

*CONTAINING THE TRANSACTIONS OF THE SOCIETY FROM
JANUARY, 1915, TO JANUARY, 1916*

EDITED BY
JOHN A. KOLMER, M.D.
RECODER OF THE SOCIETY

PHILADELPHIA
PRINTED FOR THE SOCIETY BY WM. J. DORAN
1916

OFFICERS AND COMMITTEES
OF THE
PATHOLOGICAL SOCIETY OF PHILADELPHIA.

(Elected January 14, 1915.)

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W. M. L. COPLIN, M.D.

FORMER PRESIDENTS.

SAMUEL D. GROSS, M.D., LL.D., D.C.L., OXON., LL.D. CANTAB.,
elected 1857.
RENÉ LA LA ROCHE, M.D., elected 1858.
ALFRED STILLÉ, M.D., LL.D., elected 1859, 1861, and 1862.
EDWARD HARTSHORNE, M.D., elected 1860 and 1863.
J. M. DA COSTA, M.D., LL.D., elected 1864, 1865, and 1866.
JOHN H. PACKARD, M.D., elected 1867 and 1868.
S. WEIR MITCHELL, M.D., LL.D., elected 1869.
JOHN ASHURST, Jr., M.D., LL.D., elected 1870.
JAMES H. HUTCHINSON, M.D., elected 1871 and 1872.
WILLIAM PEPPER, M.D., LL.D., elected 1873, 1874, and 1875.
H. LENOX HODGE, M.D., elected 1876.
S. W. GROSS, M.D., elected 1879.
JAMES TYSON, M.D., elected 1882 and 1883.
E. O. SHAKESPEARE, M.D., elected 1884.
J. C. WILSON, M.D., elected 1885 and 1886.
F. P. HENRY, M.D., elected 1887 and 1888
HENRY F. FORMAD, M.D., elected 1889 and 1890.
ARTHUR V. MEIGS, M.D., elected 1891 and 1892.
J. H. MUSSER, M.D., elected 1893, 1894, 1895, and 1896
W. E. HUGHES, M.D., elected 1897 and 1898.
F. A. PACKARD, M.D., elected 1899 and 1900.
CHARLES W. BURR, M.D., elected 1901 and 1902.
ALFRED STENGEL, M.D., elected 1903 and 1904.
W. M. L. COPLIN, M.D., elected 1905 and 1906.
JOSEPH McFARLAND, M.D., elected 1907 and 1908.
DAVID RIESMAN, M.D., elected 1909 and 1910.
ALLEN J. SMITH, M.D., elected 1912.*
RICHARD M. PEARCE, M.D., elected 1913.
DANIEL J. McCARTHY, M.D., elected 1914.
HOWARD M. FUSSELL, M.D., elected 1915.

* Date of election changed from October to January.

LIST OF MEMBERS.

ORIGINAL MEMBERS.

JAMES DARRACH, 5923 Greene Street, Germantown.

LIFE MEMBERS.

ELECTED

- 1887 Baker, George F., 1818 Spruce Street.
1885 Beates, Henry, Jr., 260 South Sixteenth Street.
1871 Bennett, Wm. H., 1837 Chestnut Street.
1887 Berens, Bernard, 2041 Chestnut Street.
1874 Brubaker, A. P., 105 North Thirty-fourth Street.
1887 Burr, Charles W., 1918 Spruce Street.
1887 Cattell, Henry W., 3709 Spruce Street.
1872 Cohen, J. Solis, 1824 Chestnut Street.
1883 Cohen, S. Solis, 1525 Walnut Street.
1885 Daland, Judson, 317 South Eighteenth Street.
1882 Davis, G. G., 1814 Spruce Street.
1885 Deaver, J. B., 1634 Walnut Street.
1882 Dercum, F. X., 1719 Walnut Street.
1866 Duer, Edward L., 1606 Locust Street.
1876 Dulles, C. W., 4101 Walnut Street.
1881 Fenton, T. H., 1319 Spruce Street.
1876 Fisher, Henry M., 1027 Pine Street.
1885 Fussell, M. H., 2035 Walnut Street.
1870 Getchell, Frank H., 1432 Spruce Street.
1882 Godey, H. E., N. E. corner Nineteenth and Spruce Streets.
1883 Griffith, J. P. C., 1810 Spruce Street.
1885 Hare, H. A., Eighteenth and Spruce Streets.
1870 Henry, Frederick P., 114 S. Eighteenth Street.
1880 Hewson, Addinell, Jr., 2120 Spruce Street.
1882 Hughes, W. E., Fortieth and Chestnut Streets.
1888 Kirby, Elwood R., 1202 Spruce Street.
1869 Leaman, Henry, 828 North Broad Street.
1888 Leidy, Jos., Jr., 1319 Locust Street.
1887 Leopold, Isaac, 1428 North Broad Street.
1875 Lewis, Morris J., 1316 Locust Street.
1886 Lloyd, James Hendrie, 116 South Twenty-first Street.

ELECTED

- 1875 Longstreth, Morris, 1416 Spruce Street.
 1880 McClellan, George, 1116 Spruce Street.
 1878 Mills, C. K., 1909 Chestnut Street.
 1884 Mitchell, J. K., 1730 Spruce Street.
 1885 Morrison, W. H., 8021 Frankford Avenue, Holmesburg, Pa.
 1887 Morton, S. W., 1933 Chestnut Street.
 1879 Neff, J. S., Cynwyd, Montgomery Co., Pa.
 1885 Piersol, George A., 4724 Chester Avenue.
 1885 Randall, B. A., 1717 Locust Street.
 1876 Roberts, John B., 313 South Seventeenth Street.
 1882 de Schweinitz, G. E., 1705 Walnut Street.
 1881 Skillern, P. G., 241 South Thirteenth Street.
 1884 Strittmatter, I. P., 999 North Sixth Street.
 1869 Stryker, Samuel S., 3833 Walnut Street.
 1863 Tyson, James, 1506 Spruce Street.
 1887 Westcott, T. S., 1720 Pine Street.
 1873 White, J. William, 1810 South Rittenhouse Square.
 1869 Wilson, James C., 1509 Walnut Street.

MEMBERS.

- 1894 Abbott, A. C., 4229 Baltimore Avenue.
 1907 Addison, Wm. H., School of Medicine, Univ. of Penn.
 1899 Adler, L. H., Jr., 1610 Arch Street.
 1910 Aiken, Thomas G., Berwyn, Pa.
 1906 Allyn, Herman B., 501 South Forty-second Street.
 1912 Anders, Andrews, 2200 North Twentieth Street.
 1889 Anders, J. M., 1605 Walnut Street.
 1901 Anspach, B. M., 119 South Twentieth Street.
 1906 d'Apery, Tello J., 767 North Fortieth Street.
 1900 Artelt, H., 1521 North Eighth Street.
 1889 Ashton, William E., 2011 Walnut Street.
 1909 Austin, James H., Ardmore, Pa.
 1913 Axilbund, Samuel, 5802 Cedar Avenue.
 1913 Ayer, Ira, 3718 North Gratz Street.

 1897 Babcock, W. Wayne, 2033 Walnut Street.
 1914 Baer, B. F., Jr., 2040 Chestnut Street.
 1911 Bauer, Marie L., 1613 Fairmount Avenue.
 1906 Beardsley, E. J. G., 2030 Chestnut Street.
 1900 Behrend, Moses, 1427 North Broad Street.
 1900 Bergey, D. H., 206 South Fifty-third Street.
 1905 Bernheim, Albert, 1225 Spruce Street.
 1908 Bethel, John P., 1825 Fairmount Avenue.
 1913 Birdsall, Jos. C., 123 South Thirty-sixth Street.
 1905 Blackwood, J. D., Jr., 5346 Wayne Avenue, Germantown.

ELECTED

- 1905 Bland, P. B., 1621 Spruce Street.
1914 Block, Frank B., 1503 Girard Avenue.
1891 Boger, John A., 2213 North Broad Street.
1908 Boice, J. Morton, 4020 Spruce Street.
1912 Bonney, Charles N., 1117 Spruce Street.
1893 Boyer, H. P., 4602 Baltimore Avenue.
1898 Brinton, Ward, 1423 Spruce Street.
1912 Brown, Claude P., 770 S. Broad Street.
1896 Brown, H. MacV., 4608 Baltimore Avenue.
1893 Bryan, J. Roberts, 4200 Chestnut Street.
1901 Buckley, A. C., Friends' Hospital for Insane, Frankford.
1908 Busch, John Williams, 2500 South Eighteenth Street.
- 1907 Cadwalader, W. B., 1710 Locust Street.
1901 Carncross, H. L., 1003 Spruce Street.
1902 Carnett, J. B., 123 South Twentieth Street.
1901 Carpenter, H. C., 1805 Spruce Street.
1914 Carrington, W. J., 905 Pacific Avenue, Atlantic City, N. J.
1909 Case, Eugene A., 5907 Lansdowne Avenue.
1913 Casselman, Arthur J., 317 Penn Street, Camden, N. J.
1898 Chestnut, J. C., 1817 Frankford Avenue.
1899 Clark, John G., 2017 Walnut Street.
1907 Cohen, A. J., 723 Pine Street.
1902 Cohen, M. Solis, 4102 Girard Avenue.
1896 Coley, Thomas Luther, Bethayres, Pa. Box 32.
1907 Conaway, W. P., 1723 Pacific Avenue, Atlantic City, N. J.
1905 Cope, Thomas A., 6504 Germantown Avenue.
1890 Coplin, W. M. L., 606 South Forty-eighth Street.
1900 Craig, F. A., 732 Pine Street.
1898 Cruice, John M., 1815 Spruce Street.
1901 Cryer, M. H., 140 South Lansdowne Avenue.
1898 Currie, Thos. R., 113 East Cumberland Street.
- 1896 Da Costa, J. C., Jr., 264 South Fifteenth Street.
1894 Da Costa, J. Chalmers, 2045 Walnut Street.
1909 Davis, A. B., 511 Cooper Street, Camden, N. J.
1893 Davisson, Alex. H., Ardmore, Pa.
1889 Deaver, H. C., 1534 North Fifteenth Street.
1904 Dever, Francis J., 317 South Eighteenth Street.
1913 Dewees, A. L., Haverford, Pa.
1907 Dintenfass, H., 415 Pine Street.
1910 Donaldson, H. H., Wistar Institute, 37th St. and Woodland Av.
1901 Dorrance, G. M., 2025 Walnut Street.
1913 Dorworth, Charles V., 1520 Erie Avenue.
1894 Dougherty, S. W., 256 South Sixteenth Street.

ELECTED

- 1910 Eisenbrey, A. B., St. Luke's Hospital, New York City.
1902 Ellis, A. G., Jefferson Medical College.
1900 Erck, T. A., 251 South Thirteenth Street.
1891 Eshner, A. A., 1019 Spruce Street.
1914 Estes, W. L., South Bethlehem, Pa.
- 1901 Farr, C. B., 117 South Twenty-second Street.
1907 Fetterolf, George, 330 South Sixteenth Street.
1902 Fife, C. A., 2033 Locust Street.
1907 Fleisher, M. S., St. Louis Skin and Cancer Hospital, St. Louis, Mo.
1907 Flick, Lawrence F., 738 Pine Street.
1902 Fox, H., Pepper Laboratory, Univ. of Penna.
1893 Fox, L. Webster, 1636 Spruce Street.
1899 Francine, A. P., 1932 Spruce Street.
1895 Frazier, Charles Harrison, 1724 Spruce Street.
1914 Fretz, J. F., Easton, Pa.
1913 Funk, E. D., Jefferson Hospital.
1910 Funk, Elmer H., Jefferson Hospital.
- 1902 Geisler, Howard D., 35 High Street, Germantown.
1901 Gildersleeve, Nathaniel, Laboratory of Hygiene, Univ. of Penna.
1901 Gilliland, S. H., Marietta, Pa.
1908 Ginsburg, Nathaniel, 1704 Pine Street.
1894 Girvin, John H., 2120 Walnut Street.
1904 Goldberg, H. G., 1925 Chestnut Street.
1909 Goldsmith, S. Byron, 247 South Thirteenth Street.
1906 Goodman, E. H., 248 South Twenty-first Street.
1905 Gordon, Alfred, 1812 Spruce Street.
1910 Gray, Clarence, 1803 Chestnut Street.
1890 Grayson, C. P., 1435 Spruce Street.
1912 Greene, E. M., 222 Spring Garden Street, Easton, Pa.
1906 Guilfoyle, W. F., 4014 Chestnut Street.
1890 Gummey, Frank B., 5418 Greene Street, Germantown.
1900 Gwyn, N. B., 20 South Twenty-first Street.
- 1893 Hamill, S. M., 1822 Spruce Street.
1909 Hammond, L. J., 1222 Spruce Street.
1893 Hand, Alfred, Jr., 1724 Pine Street.
1910 Hartz, Harry J., 1002 Jackson Street.
1890 Hartzell, M. B., 3644 Chestnut Street.
1904 Hatfield, C. J., 2008 Walnut Street.
1912 Hawk, Philip B., Jefferson Medical College.
1900 Head, J., 1500 Locust Street.
1896 Henry, John N., 1906 Spruce Street.
1903 Hill, H. K., 339 South Eighteenth Street.
1899 Hitchens, A. P., Glenolden, Pa.

ELECTED

- 1899 Holloway, T. B., 1819 Chestnut Street.
 1905 Holmes, E. B., 2030 Chestnut Street.
 1909 Hopkins, A. H., 1804 Pine Street.
 1904 Hoyt, D. M., 3604 Chestnut Street.
 1904 Hume, J. E., 900 South Forty-ninth Street.
 1902 Hunter, John W., 2042 Pine Street.
- 1911 Jonas, Leon, 2253 North Seventeenth Street.
 1895 Jopson, J. H., 1824 Pine Street.
 1898 Judson, Chas. F., 1005 Spruce Street.
 1899 Jump, H. D., S. E. cor. Forty-seventh and Chester Avenue.
- 1914 Kalteyer, F. J., 1533 Pine Street.
 1901 Kane, Bayard, Fern Hill Farm, West Chester, Pa.
 1912 Keating, P. McCall, Wawa, Pa.
 1906 Keene, Floyd E., 116 South Nineteenth Street.
 1910 Keilty, Robert A., 2500 South Nineteenth Street.
 1906 Kelly, James A., 1621 North Seventeenth Street.
 1905 Kelly, Thos. C., 105 Schoolhouse Lane, Germantown.
 1899 Kennedy, L. F., 301 Mauch Chunk Street, Pottsville, Pa.
 1913 Ketcham, S. R., 1708 Green Street.
 1914 Kite, G. L., Henry Phipps Institute, Philadelphia.
 1898 Knipe, J. C., 2035 Chestnut Street.
 1901 Kohn, B., 1516 North Fifteenth Street.
 1910 Kolmer, John A., Medical Laboratory, University of Pennsylvania.
 1908 Kotz, Adam L., Easton, Pa.
 1908 Krumbhaar, Ed. B., Mermaid Lane, St. Martin's.
 1892 Kyle, D. Braden, 1517 Walnut Street.
- 1909 Laird, John, 247 South Seventeenth Street.
 1899 Landis, H. R. M., 11 South Twenty-first Street.
 1890 Laplace, Ernest, 1828 South Rittenhouse Square.
 1914 Laws, G. M., 2033 Locust Street.
 1904 Leopold, S., 348 South Sixteenth Street.
 1910 Lewis, Paul A., 5011 Catharine Street.
 1898 Lodholtz, Edward, 3103 Diamond Street.
 1894 Loeb, Ludwig, 1421 North Fifteenth Street.
 1912 Lüders, Charles W., 135 Montgomery Avenue, Cynwyd, Pa.
 1903 Ludlum, S. D., Gladwyn, Pa.
 1903 Lukens, G. T., 425 Fayette Street, Conshohocken, Pa.
 1911 Lynch, Kenneth M., 3326 Walnut Street.
 1911 Lyon, Vincent, 1901 Pine Street.
- 1896 McCarthy, D. J., 2025 Walnut Street.
 1910 McConnell, G., Llaudrillo Road, Cynwyd, Pa.
 1912 McCrae, Thomas, 1627 Spruce Street.

ELECTED

- 1892 McFarland, J., 442 W. Stafford Street, Germantown.
1893 McKee, James H., 1212 Spruce Street.
1911 MacPhail, Margaretta, 133 South Eighteenth Street.
1905 Maier, E. G., 2242 North Broad Street.
1905 Maier, F. Hurst, 2035 Chestnut Street.
1902 Marshall, C. J., 5031 Pine Street.
1914 Martin, S. P., 1721 Locust Street.
1910 Meyer, K. F., Veterinary Department, University of Pennsylvania.
1905 Meyers, Milton K., 3401 North Twenty-second Street.
1914 Miller, T. G., 1805 Pine Street.
1907 Montgomery, C. M., 905 Pine Street.
1899 Müller, G. P., 334 South Fifteenth Street.
1909 Musser, John H., Jr., 1911 Pine Street.
- 1913 Narr, Frederick C., 1636 South Eighteenth Street.
1911 Nathan, David, Norristown.
1900 Newlin, A., 1804 Pine Street.
1910 Nicholson, W. R., 1731 Pine Street.
1898 Newton, R. D., 6137 Vine Street.
1901 Norris, Charles C., 1503 Locust Street.
1900 Norris, Geo. W., 1530 Locust Street.
1910 Nylin, Josef L., 26 South Twenty-first Street.
- 1894 O'Malley, Joseph, 2228 South Broad Street.
1900 O'Reilly, Charles A., 1806 Chestnut Street.
1911 Outerbridge, George W., 2040 Chestnut Street.
- 1892 Packard, F. R., 302 South Nineteenth Street.
1907 Pancoast, H. K., Box 203, Bala, Pa.
1901 Patterson, F. D., 2103 Locust Street.
1910 Pearce, Richard M., 2114 DeLancey Street.
1913 Peet, Max M., Department of Research Medicine, University of Pennsylvania.
1903 Pemberton, R., 2224 Locust Street.
1911 Pennington, Mary, 1833 Chestnut Street.
1910 Pepper, O. H. Perry, 1811 Spruce Street.
1897 Pepper, William, 1811 Spruce Street.
1902 Pfahler, G. E., 1321 Spruce Street.
1909 Pfeiffer, Damon B., 2028 Pine Street.
1905 Piersol, Geo. M., 1927 Chestnut Street.
1890 Potts, C. S., 2018 Chestnut Street.
- 1905 Rahte, Walter E., Aldine Hotel.
1912 Randall, Alexander, 1831 Chestnut Street.
1904 Reber, Wendell, 1212 Spruce Street.
1893 Reckefus, C. H., Jr., 506 North Sixth Street.

ELECTED

- 1910 Rees, W. T., 3763 North Eighteenth Street.
1914 Reeves, R. S., 1916 Spruce Street.
1906 Reichel, John, Glenolden, Pennsylvania.
1907 Repplier, S. J., 4521 Chester Avenue.
1899 Reynolds, Walter, 27 South Indiana Ave., Atlantic City, N. J.
1894 Rhein, J. H. W., 1732 Pine Street.
1902 Rhein, R. D., 2016 Pine Street.
1910 Richards, A. N., 4105 Locust Street.
1912 Richardson, Russell, Newtown, Pa.
1893 Riesman, David, 1715 Spruce Street.
1891 Ring, G. O., 2014 Chestnut Street.
1911 Ringer, A. I., 3619 Locust Street.
1904 Rivas, Damaso, corner Sixty-second and Vine Streets.
1894 Robertson, W. E., 327 South Seventeenth Street.
1901 Robinson, E. T., 1906 Pine Street.
1889 Robinson, William Duffield, 2012 Mount Vernon Street.
1911 Roddy, J. A., Jr., 1604 Pine Street.
1908 Rodman, J. Stewart, 1904 Chestnut Street.
1901 Roe, W. J., 1322 Locust Street.
1899 Rosenberger, R. C., 2330 North Thirteenth Street.
1893 Ross, G. George, 1721 Spruce Street.
1911 Rucker, J. B., Jr., Lansdowne, Pennsylvania.
1913 Russell, E. D., 1737 Diamond Street.
- 1895 Sailer, Joseph, 1830 Spruce Street.
1913 Sappington, S. W., 124 South Sixteenth Street.
1904 Sargent, A. Alonzo, 1308 Pine Street.
1890 Sartain, Paul J., 212 West Logan Square.
1912 Saxon, J. G., 5314 Spruce Street.
1909 Schaffle, Karl, 4719 Baltimore Avenue.
1895 Schamberg, J. F., 1922 Spruce Street.
1914 Schnabell, T. G., 1805 Pine Street.
1904 Schumann, E. A., 15 Pelham Road.
1909 de Schweinitz, George L., 2040 Chestnut Street.
1898 Sharpless, Wm. T., 100 South Church Street, West Chester, Pa.
1909 Shaw, J. J., 5104 North Broad Street.
1902 Shields, W. G., Jr., 414 Schoolhouse Lane, Germantown.
1889 Shoemaker, Harvey, 2011 Chestnut Street.
1899 Sinclair, J. F., 4103 Walnut Street.
1902 Sinkler, Francis W., 1606 Walnut Street.
1901 Siter, E. H., 2038 Locust Street.
1910 Skillern, P. G., Jr., 241 South Thirteenth Street.
1903 Small, J. H., 914 South Forty-eighth Street.
1903 Smith, A. J., Medical Department, University of Pennsylvania.
1897 Smyth, Henry Field, 108 West Wayne Ave., Wayne, Pa.
1902 Somers, Lewis S., 3554 North Broad Street.

ELECTED

- 1906 Sommers, Henry J., Blair County Hospital for Insane, Hollidaysburg, Pa.
1905 Speese, John, 248 South Twenty-first Street.
1893 Spellissy, Joseph M., 110 South Eighteenth Street.
1896 Spiller, William G., 4409 Pine Street.
1904 St. John, E. Q., 737 South Twenty-second Street.
1890 Stahl, B. F., 1727 Pine Street.
1904 Stellwagon, Thomas C., Jr., 110 South Nineteenth Street.
1890 Stengel, Alfred, 1728 Spruce Street.
1889 Stevens, Arthur A., 314 South Sixteenth Street.
1896 Stewart, Alonzo H., 252 North Twelfth Street.
1905 Stout, Philip S., 4701 Chester Avenue.
1912 Swalm, Charles J., State Hospital for the Insane, Norristown, Pa.
1894 Swan, John M., 457 Park Avenue, Rochester, N. Y.

1899 Talley, J. E., 218 South Twentieth Street.
1910 Taylor, A. E., New Medical Laboratory, Univ. of Penna.
1897 Teller, Wm. H., 1713 Green Street.
1906 Thomas, B. A., 116 South Nineteenth Street.
1894 Thomas, W. Hersey, 1445 North Seventeenth Street.
1902 Thornton, E. Q., 1331 Pine Street.
1909 Torrey, Robert G., 255 South Sixteenth Street.
1902 Tracy, S. E., 1527 Spruce Street.
1897 Tucker, Henry, 2000 Pine Street.
1890 Tyson, T. Mellor, 1506 Spruce Street.

1900 Uhle, A. A., 1701 Chestnut Street.
1904 Ullom, J. T., 24 Carpenter Street, Germantown.

1913 Valentine, Edna S., 2231 North Nineteenth Street.
1894 Vandervoort, C. A., 404 Flanders Building.
1909 Van Gasken, Francis C., 115 South Twenty-second Street.
1909 Vaux, Norris Wister, 8901 Germantown Avenue, Chestnut Hill.

1899 Walsh, J., 732 Pine Street.
1910 Weidman, F. D., 242 North Sixty-first Street.
1903 Weisenburg, T. H., 2030 Chestnut Street.
1913 Whaland, Berta, Episcopal Hospital.
1897 White, Courtland Y., 1808 Diamond Street.
1911 White, Ellen P. Corson, 31 Main Street, Norristown, Pa.
1901 Whiteway, Harold M., 1924 Chestnut Street.
1892 Whiting, A. D., 1523 Spruce Street.
1905 Wieder, Henry S., 2131 North Fifteenth Street.
1910 Willard, De Forest P., 1933 Chestnut Street.
1910 Williams, P. F., 1911 Pine Street.
1898 Willson, R. N., Jr., 1827 Spruce Street.

ELECTED

- 1912 Wilmer, H. B., 6019 Germantown Avenue.
1914 Wilson, G., 5000 Walnut Street.
1890 Wilson, Samuel M., 1517 Arch Street.
1910 Wise, Henry M., 1640 Erie Avenue.
1913 Wohl, Michael, Temple University.
1890 Wood, A. C., 2035 Walnut Street.
1898 Wood, George B., 129 South Eighteenth Street.
1910 Wood, Wilson G., 1326 Pine Street.
1899 Worden, C. B., 322 South Sixteenth Street.

1911 Young, Charles H., 4813 Baltimore Avenue.

1902 Zimlick, A. J., Green and Harvey Streets, Germantown.

NON-RESIDENT MEMBERS.

SUBSCRIBERS TO THE PROCEEDINGS.

Biggs, M. H., Rutherfordton, N. C.
Cummins, W. T.
Dock, George, Washington University, Locust and Eighteenth Streets,
St. Louis, Missouri.
L'Engle, Edward M., L'Engle Building, Jacksonville, Fla.
Foster, G. B., Fort Leavenworth, Kansas.
Hamann, C. A., 404 Osborn Building, Cleveland, Ohio.
Hawke, N. W., Clifton Heights, Delaware County.
Hunt, C. J., Department of Health, Harrisburg, Pa.
Potter, F. C., Central Indiana Hospital, Indianapolis, Ind.
Rahter, C. A., 110 North Second Street, Harrisburg, Pa.
Ravenel, M. P., University of Wisconsin, Madison, Wis.
Royer, B. Franklin, Donaldson Bldg., Harrisburg, Pa.
Wood, Harold B., Rochester, Minn.

NON-RESIDENTS NOT SUBSCRIBERS.

Alburger, Henry R., Bloomington, Indiana.
Ball, M. V., Warren, Pa.
Barnes, A. S., Jr., Missouri Trust Building, St. Louis, Mo.
Cadbury, W. W., University Medical School, Canton, China.
Carter, W. S., University of Texas, Galveston, Texas.
Coca, A. F., Cornell Medical College, New York.
Cooke, Jean V.
Cummins, W. C., Southern Pacific General Hospital, San Francisco, Cal.
Edsall, David L., Harvard Medical School, Cambridge, Mass.
Edwards, W. A., 610 Braley Bldg., Los Angeles, Cal.
Evans, Joseph S., Madison, Wis.
Gaylord, H. R., 472 Delaware Ave., Buffalo, N. Y.
Gerson, T. P., 1621 Ingraham Street, Los Angeles, Cal.
Hamaker, W. D., Meadville, Pa.
Harris, H. F., Atlanta Coll. of Phys. and Surg., Atlanta, Ga.
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Slifer, Henry F., North Wales, Mont. Co., Pa.
Stadelman, Eugene, "Magistral," Maria Del Oro, Dgo, Mexico.
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Toulmin, H., Haverford, Pa.
Wells, G. M., Wayne, Delaware County, Pa.
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Wetherill, R. B., Lafayette, Ind.
Williams, H. L., 327 Fourteenth Ave., S. E., Minneapolis, Minn.
Wilmarth, A. W., State Home for the Feeble-minded, Chippewa Falls,
Wisconsin.
Wilson, J. D., 210 Connell Building, Scranton, Pa.

CORRESPONDING MEMBERS.

ELECTED

- 1885 Dent, Clinton T., St. George's Hospital, London, England.
1888 Fideli, Gregorio, Rome, Italy.
1908 Flexner, Simon, Rockefeller Institute, New York City.
1908 Novy, F. G., Ann Arbor, Michigan.
1908 Osler, Sir William, University of Oxford, Oxford, England.
1886 Pye-Smith, P. H., Guy's Hospital, London, England.
1898 Welch, William H., Johns Hopkins University, Baltimore, Md.

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PROCEEDINGS

OF THE

Pathological Society of Philadelphia.

Address of the Retiring President.

HOWARD M. FUSSELL, M.D.

When one looks over the volumes of the PROCEEDINGS of the reports of the Pathological Society of Philadelphia, two facts are outstanding: First the *character* of the articles published in the PROCEEDINGS. In the earlier volumes the reports, with a few exceptions, embrace the presentation of specimens which show the morbid anatomy of various organs.

In volume one, however, is a noteworthy article on "Cancer of the Pancreas," by Dr. J. M. Da Costa; this article differs from the other articles in that it is a compilation of a number of cases, and cites the morbid anatomy of each. The aim of all these presentations was to interest the members in the course of a disease in its morbid anatomy, in its diagnosis and in its treatment the chief aim being a study of morbid anatomy. Indeed, so interesting are most of the reports that the writer almost failed in the writing of this paper because of the time he consumed in reading the reports.

The second fact is the character of the men who organized the Pathological Society of Philadelphia, the men who are at present members, and the character of those whom it has honored by the office of President.

The resident members who comprised the Society October 14, 1857, up to May 24, 1860, were forty in number.

D. H. Agnew,
C. S. Boker,
J. H. Brinton,
J. M. Da Costa,
Jno. T. Darby,
Jas. Darrach,

Emil Fischer,
Wm. S. Forbes,
S. D. Gross,
S. W. Gross,
A. D. Hall,
G. C. Harlan,

R. P. Harris,	E. Livezey,
Edward Hartshorne,	J. F. Meigs,
Henry Hartshorne,	S. Weir Mitchell,
Addinell Hewson,	Geo. R. Morehouse,
H. Lenox Hodge,	T. G. Morton,
Wm. D. Hoyt,	Wm. Moss,
Geo. H. Humphreys,	John H. Packard,
Jas. Hutchinson,	R. A. F. Penrose,
John K. Kane,	Th. B. Reed,
Wm. V. Keating,	Albert H. Smith,
Wm. Keller,	Francis G. Smith,
Rene La Roche,	Alfred Stille,
Jas. J. Levick,	Elwood Wilson,
Samuel Lewis,	J. J. Woodward.

Almost every man of above list has left his mark in the advance of clinical medicine and surgery. Every man was an active clinician, either medical or surgical. Following up the membership to the present day, it is seen that the vast majority of the members are practising physicians or surgeons, a very few being pure pathologists. Of the thirty men who have been elected to the presidency, five have devoted themselves solely to pathology, the others were clinicians.

In the beginning, to be sure, there were no pure pathologists, the Society being made up of clinicians who had a desire to know the changes which took place in organs, the seat of disease. Gradually as pathology has become a specialty, and as different aspects of pathology have presented themselves pure pathologists, physiological chemists, serologists, bacteriologists have joined the ranks of the Society, and have presented papers of great intrinsic value, of value as related to the special branches of pathology to which they belong, and also of value to the clinician.

A perusal of the papers presented as the aspects of pathology have changed will show that there is probably not a subject connected with the cause of disease or its results or its prevention which has not been presented by the members of the Society or by speakers invited to discuss subjects before it.

During my incumbency, even sociological problems have been discussed, one by Dr. Edsall, the other by Eugene Fisk. It is the varied membership of the Society as it now stands—clinicians, pure pathologists, chemists, bacteriologists, serologists, which makes the Society of such great value.

Dr. Burr in his presidential address bemoans what seems to have been the fact that fresh specimens were not shown during his term of office. When Dr. Smith introduced the innovation of holding meetings at the various teaching institutions, this fault seems to have been remedied, for at several of the institutions, notably at

the meetings held at the Jefferson Medical College, beautiful fresh specimens were shown. It is right that specimens showing the morbid anatomy of organs should be shown. This is one of the ways the interest of clinicians is kept up. The one criticism the speaker would make regarding the specimens is that the clinical notes are scarcely as full as might be desired, as a rule. There is a happy medium between reading all the bedside notes of the patient from whom certain specimens were removed and a mere enumeration of co- incidental facts. The clinical notes should be full enough to convey an idea of the character and progress of the case, and not so full as to be tiresome and useless, and yet the fulness of the report should be great enough that when presented they will be of value for reference; the details may be printed but should not be read. The same may be said of technical reports. An abstract, or indeed a demonstration, of methods of procedure may easily be made which will interest the entire audience. The details can be printed and will be of value.

The President on looking back at the year just passed feels grateful for all the work that has been done for the Society during his incumbency, and wishes to make these suggestions. Being a clinician interested in all that pathology has to offer; believing that the work in searching for the microbial and other causes of disease; believing that a knowledge of the effects of disease on the fluids and organs of the body is the true foundation for treatment; recognizing that clinical observation is of the greatest value in diagnosis and treatment, he also realizes that knowledge of the changes which takes place, knowledge of the cause of disease and the methods which nature uses to cure are of equal importance. He finally realizes the utter futility of either alone in clinical medicine and surgery. A combination of clinical knowledge and pathological knowledge will work wonders. Note the difference between the diagnosis and treatment of diphtheria today and before Koch and Loeffler isolated diphtheria bacilli and von Behring applied the knowledge gained in the laboratory and by laboratory experiments. The one was fighting windmills while today's treatment, founded upon pathological knowledge, is specific.

Therefore the suggestions are that specimens be presented fresh when possible, always with enough detail to attract clinicians. That when a new subject is presented, such for instance as the subject of the condition of the spinal fluid in syphilis, it be combined in the same meeting with the application of this knowledge to the diagnosis and treatment of cerebrospinal syphilis. This will attract the pathologist, the serologist, and the clinician. For as it was in the beginning of this Society so it has continued to be, and so it must always be, that clinicians must continue to be attracted to the meetings if the Society is to continue its good work. The Society must show by the work of its members that the true value

of the Society is in its effect upon the advancement of clinical medicine and surgery.

The speaker cannot close this somewhat rambling address without acknowledging to the members of the Society that great debt of gratitude he owes for the honor which he has been given in presiding during the past year.

Each man who has been a president of this Society is known over the whole of this city. Many are familiar names in the whole medical world. However unwarrantable it may seem to posterity that my name should be in this roll of honor, it is the greatest satisfaction to me that my descendants may point to my name as one of the presidents of this Society. *January 13, 1915.*

X-ray Pictures of Injected Body.

A. HEWSON, M.D.

X-ray photographs of a three-year-old child showing a picture of the circulation of the arteries and veins on the chest, abdomen, pelvis, and anastomosis about the hip, knee, ankle, and foot.

The method of the preparation was as follows: The body was preserved by an ordinary injection not containing heavy metal salts and very slight amount of formaldehyde. Twenty-four hours after there was introduced into the femoral artery a watery solution of starch, cold, colored with the red oxide of mercury, light English vermillion. This was followed by an injection into the femoral vein (cephalad) of a cold watery solution of starch impregnated with subnitrate of bismuth. The distention of the vessels of the skin of the head and neck were noticeable and the eyes were slightly proptosed and firm.

In a very short time the body was x-rayed, with the result as presented. In the arteries about the hip, knee, ankle, and foot the anastomosis could be easily traced. *January 28, 1915.*

The Deposit of Metallic Silver in the Tissues.

A. HEWSON, M.D.

A seven-months fetus was presented into which had been introduced in the order named 200 c.c. of 5 per cent. of a 40 per cent. solution of formaldehyde, 200 c.c. of 2 per cent. argentic nitrate, and 200 c.c. of 2 per cent. solution of ammonium hydrate, with the result that metallic silver was deposited in the tissues.

All the injections were made with distilled water into the aorta. No blood or solutions were allowed to escape, as the cardiac ends of the pulmonary artery and aorta were ligated together.

The microscopic results were apparent in a few minutes by a light brown mottling of the skin, which later became darker. On opening the body the brain was red, all the vessels a glistening sheen, with distinct looking-glass appearance where the layer vessels were found. The abdominal viscera were darker red with vessels seen as glistening dark threads everywhere. Specimens of the mandible, patella, and femur side by side with the same aged bones not injected showed with the *x-ray* a marked change in the shadow.

In the microscopic stained and unstained sections of all the tissues of the body the silver was found to have invested the tissues somewhat, but was most distinct in the small bloodvessels.

The sections of the eyes were most beautiful of all, although the silver could be seen in the tooth sacs, ear, liver, kidney, and brain. A blue sheen was apparent with the naked eye alone in all the unstained microscopic slides.

January 28, 1915.

Tumor of the Left Cerebellar Lobe.

S. D. INGHAM, M.D.

This patient was a child, about five years of age; she was not under observation during life. There was a history of staggering, however, and other signs of incoördination, indicating cerebellar disease, obtained from the family physician. Tumor is interesting in showing a degree to which the glioma may invade the cerebellum with but slight alteration to the natural contour, also as an example of brain tumor at an unusually early age.

January 28, 1915.

Tumor of the Fourth Ventricle.

S. D. INGHAM, M.D.

This specimen is from a girl, about thirteen years of age, in whom symptoms of headache, choked disk, vomiting, and slight stammering were present, without any more definite symptoms of localization. There was a history of some slight febrile attacks, and there also was some question as to whether the case was one of meningitis or of tumor. Cerebellar decompression was performed with temporary relief to some of the pressure symptoms, but a large hernial

sac developed, and large quantities of cerebral fluid were aspirated from the swelling almost daily for several weeks. At the necropsy the third lateral ventricles were much distended, and communication with the hernia seen. When the brain was removed the tumor mass was observed at the after-hardening section through the cerebellum, and the medulla showed that the entire fourth ventricle was filled by a tumor mass and had been the cause of internal hydrocephalus.

January 28, 1915.

Tumor of the Left Temporal Region.

S. D. INGHAM, M.D.

The patient was a robust man, about sixty years of age, who had developed headache, mental confusion, difficulty in speaking, which had increased, and he became ultimately unconscious, with a high grade of choked disk. Diagnosis of tumor in the left hemisphere was followed by an operation in the temporal region, which, however, did not disclose the neoplasm. Much temporary relief occurred, and the patient was home for several months, although some symptoms of the condition still persisted, and an enormous hernia developed through the cranial opening. This was as large as a good-sized orange. The patient finally succumbed about six months after the operation, and the necropsy revealed a tumor of enormous size surrounded by considerable cerebrotissue presenting at the opening of the side of the operation.

January 28, 1915.

Glioma of the Left Occipital Lobe.

S. D. INGHAM, M.D.

The patient from whom this specimen was obtained was a young woman, aged eighteen years, and who, during life, presented the general symptoms of brain tumor. The only evidence of localizing value pointed to the left side of the cerebellum. Operation failed to reveal any cerebellar lesion, and only after the operation did right hemianopsia appear, repeated charts of the visual fields having been normal. After the operation, with the further progress of the growth, hemianopsia did develop. The circumstance may be in part explained by the well-known tendency of gliomata to infiltrate, and only at a comparatively late period to destroy the nervous tissue.

January 28, 1915.

Ochronosis.**MICHAEL G. WOHL, M.D.**

Ochronosis is a condition characterized by brown or black discoloration of cartilages of ribs, joints, intervertebral disks, cartilages of trachea. The pigment may also deposit in loose connective tissue, kidneys, and intima of bloodvessels. Besides the first case described by Virchow in 1866 there are in the literature 33 more cases (total of 34 cases); 15 cases were diagnosed postmortem and 19 cases during life.

The origin of the pigment is endogenous and exogenous (Pick). The endogenous pigment results from the action of tyrasinase upon the homotogenetic acid in the blood which is derived from the aromatic group of the protein molecules. The exogenous is due to absorption of minimal quantities of phenol from carbolic acid dressings.

The specimen presented before the Society consists of a femur from a pig, sent to me by Dr. Aronson of Little Rock, Ark. The bone is of a brown-chocolate color. The cortex is intensely pigmented, and the nearer we reach the marrow the less pigment is observed. The marrow is slightly pigmented. The condition of other bones as well as of the viscera of the pig could not be ascertained. The pigment was insoluble in alcohol, ether, chloroform; it was slightly soluble in 10 per cent. solution of HCl, and freely soluble in 40 per cent. solution of potassium hydroxide.

January 28, 1915.

**Lymphosarcoma of the Small Intestines Complicated by
Intussusception.****WAYNE W. BABCOCK, M.D., WM. E. ROBERTSON, M.D.,
MICHAEL G. WOHL, M.D.**

Patient was operated on by Dr. Babcock. The operation consisted in resection of 39 inches of small bowel, end-to-end anastomosis, and removal of enlarged mesenteric glands. There was an edematous condition of the preperitoneal tissue with 8 ounces of clear serous fluid in the peritoneal cavity.

Throughout the resected bowel there were scattered nodules of whitish color, somewhat firm in consistency, varying in size and thickness. Invagination of one part of the small intestine into that containing the nodules took place. Histological examination of the nodules revealed lymphosarcoma.

January 28, 1915.

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Primary Carcinoma of the Urinary Bladder.**M. G. WOHL, M.D., AND H. DUNCAN, M.D.**

About 0.25 per cent. of tumors occur in the urinary bladder. Among them the papillomata are the most common. Primary carcinoma of the bladder is rare, and still more rare in the female.

The neighboring pelvic organs were not involved. The bladder removed and upon the base there are about four papillary cauliflower-like masses. The papillæ could not be moved with the mucous membrane for they have penetrated the submucous and muscular layers. Microscopically the tumor consists of connective-tissue stroma and epithelial cells—small and large, irregularly arranged, and penetrating the submucous and muscular coats.

January 28, 1915.

Gastric Carcinoma Removed Seven Years Ago and Patient Still in Good Health.**W. E. ROBERTSON, M.D.**

The case to be reported is of interest chiefly from the fact that the woman remains in excellent health eight years after partial excision of the stomach for carcinoma. She was fifty-two years old in 1907, when she first came under observation. Her chief complaint with respect to the gastric condition was epigastric pain with occasional cramp-like pains in the same region. Attacks of vomiting during three months, with obstinate constipation; about thirty pounds lost in weight in the preceding six months, though she did not look emaciated or cachectic. Physical examination was negative except that the abdomen was large, with a pendulous redundant wall. The stomach was dilated and prolapsed. Tenderness on pressure in the epigastric region, with some plus tension. No distinct tumor and no glandular enlargement discovered anywhere. Very rarely nauseated except for a moment before vomiting, then at first she vomited clear fluid followed by the stomach contents. A sense of epigastric pressure precedes vomiting and is followed by relief. Whether she eats or not, these attacks occur, even water will induce them. Vomited stomach contents contain mucus, dark colored, no erythrocytes. Microscopically, a moderate number of starch granules; many fat globules; acid to litmus. Total acidity, .5840 per cent., or 160 N₁₀NaOH.; free, HCl .365 per cent., or 100 N₁₀NaOH.

The explanation of this very high acidity was not clear, nor could she recall the character of food taken. Gastric analysis made a

few days later showed a total acidity of 19 with a mere trace of free HCl. No lactic. Microscopically, a great many pus cells were found in the washed stomach contents and these with the clinical findings, in the absence of a rhinopharyngitis, were looked upon as strongly suggestive of malignancy. The blood count was almost normal, with a moderate leukocytosis.

The condition continued, slight nausea, repeated vomiting, often sudden and projectile, usually consisting of a dark, brownish material containing mucus, sometimes a little grumous and slightly offensive. On one occasion sarcina were found.

She was operated upon ten days after first coming under observation. A carcinoma was found, not ulcerated, allyptical in shape, somewhat pedunculated, springing from the anterior wall of the stomach, near the pylorus. No adenopathy was noted and no gross involvement of the liver. Resection of about one-half of the stomach was done by Dr. H. C. Deaver. Subsequent recovery was uneventful. Microscopical examination of the growth revealed a scirrhus carcinoma which showed patches of infiltration here and there, with round and polynuclear cells. There was some inflammatory reaction in the gastric mucosa in the neighborhood of the growth with areas of polynuclear infiltration. It was thought that this was the source of the cells found in the gastric washing.

Over eight years have elapsed since she was operated upon. She has maintained her weight and nutrition and at no time has presented any gastro-intestinal phenomena other than moderate constipation which is probably, in part at least, the result of the redundant abdominal wall and visceroptosis. January 28, 1915.

Specimen from a Case of Recurrent Extra-uterine Pregnancy.

MOSES BEHREND, M.D.

The history of the case is as follows: R. B., aged thirty-four years; the mother of three uncomplicated labors. Her menstruation was always normal up to March, 1913, when she menstruated every three weeks. The month of May she bled almost every day up to the time of her first operation in June, 1913. On opening the abdomen the characteristic appearance of a ruptured tubal pregnancy presented itself. From the time of her first operation to June, 1914, she menstruated every two weeks. In April of the same year the presence of extra-uterine pregnancy was suspected. This irregular bleeding continued until July 13, 1914, when she menstruated one day. A vaginal examination was made on August 18 because she complained of continuous backache and pain on the left side, but on account of the rigidity present, little infor-

mation was obtained. Bleeding started which relieved the pain instantly, but recurred as soon as the bleeding stopped. This can be explained by the fact that as soon as the tube filled with blood the pain returned. Two days before operation the patient bled profusely. On vaginal examination a mass was felt on the left side and a positive diagnosis of tubal pregnancy was made.

Operation was performed September 8, when the tube was found to be intact; there was practically no blood in the peritoneal cavity. On opening the tube outside of the abdomen a six-weeks fetus within the amniotic sac was disclosed. *February 11, 1915.*

Specimens of Duodenal Ulcer.

S. W. SAPPINGTON, M.D.

Three specimens of duodenal ulcer were exhibited, all from male subjects, aged respectively forty-eight, fifty-five, and sixty years. One specimen showed two ulcers. The patient presenting the smallest ulceration of the duodenum had a clinical complication of an enormous abdominal mass which proved at autopsy to be a large, intraperitoneal, fibrin-encased clot weighing 8900 grams, and evidently initiated by hemorrhage at the site of the ulcer.

February 11, 1915.

Traumatic Meningitis (Forceps Operation) in a Newborn Infant.

MOSES BEHREND, M.D.

The specimen illustrating the case of traumatic meningitis was removed from a baby ten days old. The mother was a primipara and had been in hard labor twenty-seven hours, after which forceps were applied to the head in the R. O. A. position. After a difficult and tedious forceps operation, lasting one hour, the head was extracted. Great care was taken not to deliver too fast or exert too long-continued pressure. The baby weighed 10.5 pounds at birth and seemed perfectly well for the first six days, after which it developed symptoms of meningitis. The symptoms were convulsions, opisthotonus, contractures of the fingers and toes, rigidity of all the muscles, and Kernig's sign. It may be interesting to note that one of the glands of the neck broke down and emitted a foul-smelling discharge. This could have been a possible source of infection.

Upon removal of the scalp numerous ecchymotic spots were seen, especially in the temporal regions. Signs of hemorrhage were

noted at the coronal and lambdoid sutures, but on turning back the skull no subdural collection was seen. The middle and posterior fossa were empty. The brain was congested throughout. Lymph deposits were noted in the occipital region between the hemispheres. The entire base of the brain, including the cerebellum and the right Sylvian fissure, also showed deposits of lymph. The result of a culture showed a diplococcus, probably the pneumococcus.

February 11, 1915.

Myoma of the Stomach.

S. W. SAPPINGTON, M.D.

An external myoma of the stomach was exhibited. Specimen removed by operation on female patient aged sixty-three years. The tumor arose from the anterior wall of the stomach and was freely movable on a long pedicle. It weighed 670 grams, resembled a potato in shape, and measured 15 x 11 x 6 cm. Microscopically it was a leiomyoma. No metastases were found. An adenomatous polyp of the stomach situated so as to fit the pyloric opening was exhibited. It seemed to have caused no stenosis.

February 11, 1915.

Lymphangioma Congenitale Cysticum Multiplex.

MOSES BEHREND, M.D., AND I. V. LEVI, M.D.

Baby Cauter, born November 9, 1914, at 8.20 P.M. Fairly well-nourished female infant, weighing six pounds. Labor normal, lasting about twenty hours; second stage short, about one hour; no dystocia due to mass. At the birth of the head a large mass on the right side was noticed, which was apparently cystic in character, measuring nine and a half inches at the greatest circumference of the neck. Baby was apparently healthy at birth, and at first was able to nurse from the mother's breast, but after about five days began to gradually lose weight and developed difficulty in nursing. On November 14, a small incision was made and some of the fluid withdrawn (20 c.c. reddish brown) and also a piece of the tissue removed for examination. In spite of the withdrawal of the 20 c.c. of fluid the tumor rapidly grew, and on the following day measured eleven and a half inches. Temperature of the child ranged between 101° and 106°, and after first week baby had recurrent attacks of cyanosis, which increased in severity and frequency, until November 23, when baby died in one of these attacks.

An x-ray examination of the child on November 13 showed no

abnormalities of the bony structure. The report of the pathologist was as follows:

The fluid removed was sterile and was practically blood, with an overabundance of lymphocytes. The tissue removed was fibrous, lined with endothelium, which showed some necrosis.

On November 23 the child died and an autopsy was performed. The tumor was closely adherent to the skin, superficial fascia, and platysma myoides. The growth was beneath the sternomastoid on the right side. It displaced the sternothyroid muscles to the left side of the neck in the region of the left sternomastoid muscle. The tumor was closely attached to the lower jaw. The floor of the mouth was encroached on, on account of which the tongue had to be removed to extirpate the tumor; it was adherent to the right clavicle and first rib, necessitating their removal. It was tightly adherent to the hard palate and the right mastoid bone. The growth was removed *in toto*.

February 11, 1915.

A New Test of Blood-serum and Cerebrospinal Fluid in Cases with Syphilitic Involvement of the Nervous System.

ALFRED GORDON, M.D.

The immense value of the Wassermann reaction in various affections of syphilitic nature does not require more special emphasis. Speaking particularly of diseases of the nervous system, it is now well established that in cerebrospinal syphilis, tabes, and paresis the above reaction is invariably positive on either the blood serum or on the cerebrospinal fluid or on both humors. If at a given moment in any of these affections the reaction happens to be negative, it may be due to the presence in the organism of antisyphilitic remedies such as mercury, iodide, or salvarsan.

The Wassermann test is unquestionably a complex biochemical operation, and can safely be undertaken only in a well-equipped laboratory and by a well-trained man. Its inaccessibility to the average man led some investigators to devise simpler and less complicated manipulations. Now and then reports are published indicating new reactions in syphilitic diseases, all tending to simplify and render the test for syphilis less and less difficult. While they all have not totally been successful and do not all stand irreproachable comparison with the Wassermann test, nevertheless they all seem to show that there is a possibility of finding some other biochemical reactions than those devised by Wassermann and thus simplify the procedure in search for such a common affection as syphilis. It has been my good fortune to devise a test which after some study has proved to me to be of some value. It consists of

the following features: 0.3 or 0.5 c.c. of blood serum are placed in a test-tube. Five drops of 1 to 100 solution of bichloride of mercury are slowly allowed to fall in the centre of the tube. The following phenomenon is observed: If the blood-serum comes from a normal individual or from an individual suffering from other diseases but free from syphilis (as proved by the Wassermann test) the moment the reagent comes in contact with the serum a cloudiness will appear which will rapidly increase in density, so that at the end of five and sometimes ten minutes the entire or almost the entire amount of serum will present a thick gray mass with a slightly greenish tint. In some cases the thickness appears at once, in other cases shortly after the dropping of the reagent, and in still some cases five or ten minutes later. In syphilitic sera the contact of the reagent produces not the above thick mass but only a foamy upper layer, which remains as such for some time. Here we observe a distinct slight upper whitish and foamy layer beneath which the normal serum is evident; the latter preserves the same appearance and color as prior to the manipulation. The contrast between the amount of coagulum, its density, its appearance, and its color is decidedly distinct. Moreover, if these altered sera are allowed to stand overnight the following striking condition will be observed: The foamy whitish coagulum of the syphilitic serum will be dissolved and disappear, while the coagulum of the normal serum will fall down to the bottom of the tube and will be superimposed by a clear layer of the normal serum. The above-described reaction requires certain specifications to be mentioned. The reaction is particularly distinct when the blood-serum is perfectly clear and light, viz., free from chylus and blood corpuscles. The more transparent, light, and clear the serum is the quicker, the more evident, and the more conclusive the chemical reaction will appear. In reddish sera the test is also very satisfactory, although not as prompt as in light sera. Nevertheless it can be easily detected. Here we also observe the same difference in the density of the coagulum, in its color, in its appearance, in the promptness of its formation, and in the sharp separation of the foamy upper layer from the clear lower layer in the syphilitic sera. An interesting reactive condition is observed with sera which after being positive for the Wassermann reaction became negative after a course of treatment with salvarsan. Here the mercury reaction is not entirely positive and yet not altogether negative. The coagulum presents an intermediary phase, viz., it is not as thick, not as gray greenish, and not as promptly formed as in the normal sera; also it is not as foamy and not so distinctly separated from the underlying serum as in the syphilitic sera. The same characteristics of the reaction are observed in sera in which the Wassermann test is doubtful in its results. All these special features tend to prove that the doubtful and the just mentioned changed reactions (from posi-

tive to negative) are, so to speak, transitional phases of the fundamental biochemistry of blood-serum in syphilitics. Some difficulty is experienced in interpreting the reaction in chylus sera. The results of the test are not always the same. However, the above-described differences are present, but to a very slight degree, and with a little experience it will be noticed. On the other hand in examining the blood-serum of any patient for the above reaction the chylus character of the serum can be almost entirely obviated. It is a well-known fact that if the blood is taken from a patient shortly after a meal the serum will have the chylus cloudiness. If the blood is taken when no food has been partaken for many hours the serum will be chylus-free. It is therefore easy to obtain a transparent and clear serum in every case by instructing the patient to remain without food the entire morning until the blood is withdrawn for an examination. The above-mentioned difficulty is therefore removed. All the cases in which I succeeded to examine for the above mercurial test have been without exception controlled by the Wassermann test. The possible mercurial reaction in almost every case ran parallel with the positive Wassermann test. I say almost, as in two cases of tabes which presented a negative Wassermann on serum but a positive Wassermann on the cerebrospinal fluid the mercurial test was positive on serum. In one case of tabes in which only Lange's gold test was positive but Wassermann negative for both fluids the mercurial test was also positive on blood-serum.

To sum up it may be said that the reaction described here has shown such a uniformity in the results of my cases that I am warranted in bringing it before the profession with a plea for a more extensive trial. If its uniformity can be demonstrated on a very large number of cases its practical value is too obvious to dwell upon. The facility with which the reaction can be carried out and the simplicity of its character may then be of immediate assistance at the bedside. This communication is only a preliminary one. While the reaction is grossly such as I have described, nevertheless several problems remain to be elaborated. The most essential one is to determine the factors to which is due the difference in the promptness of formation of the coagulum in blood-serum and cerebrospinal fluid in various cases with a positive mercury reaction. Next in importance is what particular chemical element is present in the humors with a positive reaction that causes or assist in causing the formation of the coagulum. Future investigations will perhaps enable me to elucidate these as will other problems intimately connected with the nature of this new reaction.

February 11, 1915.

Further Studies in Experimental Gastric Ulcer.

By MARTIN E. REHFUSS, M.D.

(From the Jefferson Medical College.)

Several years ago I presented before this Society a communication on "The Experimental Production of Acute Toxic Ulcer of the Stomach." In that work, performed under the direction of Dr. Leo Loeb, at the University of Pennsylvania, we were able to demonstrate the presence of hemorrhagic erosions and ulcer formation in the guinea-pig after the injection of the venom of the *Heloderma* as well as a large number of toxic substances differing widely in their chemical and pharmacological effects. We pointed out, through a series of experiments, that the lesion was in no way specific, and secondly that it was primarily digestive in character and the vascular phenomena accompanying the lesion were secondary. It was furthermore emphasized that neither thrombosis nor vasoconstriction played any part in the mechanism of these lesions.

Since then I have succeeded, in 1910, in producing ulceration in guinea-pigs by the injection of serum from dogs suffering with an acutely-induced pancreatitis. This pancreatitis was produced by the injection of oil into the pancreatic ducts, and through the kindness of Dr. Joseph Sailer I was enabled to obtain sufficient material to produce death in eight to fourteen hours in 4 out of 6 guinea-pigs. In 3 out of the 4, hemorrhagic erosions were found and in 2 distinct ulcer.

In the Pasteur Institute at Paris I collected a large number of stomachs from animals dead of bacterial infections. Various members of the staff saved the organs for me, and to Dr. Nicolle I am especially indebted for a number of specimens which he placed at my service. These animals died in periods of several hours to twenty-four days. In probably over 100 animals of various species, I was able to demonstrate lesions in 8. A rabbit dead of pneumococcus infection, 2 guinea-pigs and 1 mouse suffering from experimental septicemias, 1 guinea-pig of dysentery, 1 guinea-pig of tetanus, and in 2 monkeys dead in three weeks of tuberculosis. In the great majority I was unable to demonstrate any lesion, but in all of those mentioned with the exception of one monkey, the lesions were multiple and hemorrhagic. The only criticism to be made of these observations is the fact that it was sometimes impossible to obtain the organ until death ensued. In nearly all these cases, however, the stomach was obtained in a very short time after the death of the animal.

In our previous work Dr. Loeb demonstrated the production of

perforating ulcer in guinea-pigs after the repeated intramuscular injection of dilute hydrochloric acid. This I have carried out in some 20 guinea-pigs with the occurrence of hemorrhagic erosions and ulceration in all but 1 animal. If the animal survived after four hours, it was chloroformed. In 3 of this series perforation occurred, although in 2 of them the initial lesion was small and the ulcer which followed sharp and penetrating. In all these experiments the same type of lesion was observed, whether produced by bacteriological poisons, toxic pharmacological or chemical substances. It is to be pointed out that in all probability many of these substances appear to be eliminated by way of the stomach. In 1 instance after the injection of dilute hydrochloric acid in the feeding guinea-pig, a total acidity of 83 in terms of $\frac{1}{10}$ NaOH was observed in contrast to figures approximating 60 which I was able to observe in several other animals. In some of the specimens observed at the Pasteur Institute while no lesions were found, portions of the mucosa were deeply congested indicating acute congestion of the organ. The main point which these studies seem to bring out is that any acute intoxication profoundly affecting the animal apart from any specificity it may possess is capable of inducing an acute ulceration of the mucosa. The precise mechanism by which this is induced whether through elimination, or a direct injurious effect on the mucosa, or through a destruction of some protective mechanism is not clear.

February 11, 1915.

The Shick Toxin Reaction for Immunity in Diphtheria.¹

JOHN A. KOLMER, M.D., AND EMILY L. MOSHAGE, M.D.

(From the Laboratory of the Philadelphia Hospital for Contagious Diseases.)

As is well known, immunity in diphtheria is generally incomplete and of short duration. Even an attack of this disease with consequent stimulation of the body cells with diphtheria toxin and the formation of homologous antitoxin and other antibodies does not confer for any considerable length of time that immunity which is so characteristic of scarlet fever, measles, and smallpox. Passive immunization with antitoxin confers an immunity even more fleeting, because the immune serum constituents are quickly eliminated or destroyed. For this reason, Smith, Park, and more recently von Behring have suggested an active form of immunization in diphtheria by means of toxin-antitoxin mixtures, as the antitoxin prepared by our own body cells is more lasting. In

¹ Published in full in the Amer. Jour. Dis. of Children, 1915, ix, 189.

order to estimate the degree of immunity following injections of these toxin-antitoxin (T-A) mixtures, it is necessary to determine the amount of antitoxin per cubic centimeter of serum in units or fractions of a unit. For this purpose Römer's intracutaneous technic with the guinea-pig has been used, but the method is rather too uncertain and complicated for the routine examination of large numbers of persons.

Shick has proposed a very simple clinical test for this purpose; it is based on the observations of von Behring that as little as one-hundredth of a unit of antitoxin per cubic centimeter of our serum will protect a person against diphtheria. Schick has determined that when an amount of diphtheria toxin equal to one-fiftieth the *minimal lethal dose* (M. L. D.) for a guinea-pig weighing from 250 to 300 gm. is injected intracutaneously in the human skin, if one-thirtieth or more antitoxin per cubic centimeter of serum is present this dose of toxin is neutralized and no reaction follows; if less than this amount of antitoxin is present or none at all, the toxin injected remains unneutralized and produces a local inflammatory reaction of erythema and edematous infiltration. This toxin test may be used for determining the response to active immunization by means of the T-A mixtures; it does not, however, serve the purpose of a quantitative estimation of antitoxin.

The objects of this study were as follows:

1. To apply the toxin skin test to a large number of apparently normal persons to determine susceptibility to diphtheria at different ages.
2. To determine quantitatively the antitoxin content of the blood-serum of persons reacting positively, slightly positively, doubtfully and negatively in order to study further the toxin test under conditions in which the quantity of antitoxin in the blood is known.
3. To study the degree and duration of immunity to diphtheria in normal persons following an injection of diphtheria antitoxin.
4. To study the degree and duration of immunity among persons suffering with scarlet fever and receiving an injection of diphtheria antitoxin.
5. To study the degree of immunity during and following an attack of diphtheria.
6. To study the practical value of the toxin skin test in determining which persons should be immunized with antitoxin when exposed to diphtheria.

SUMMARY. 1. The toxin skin reaction is a valuable and reliable method for detecting susceptibility to diphtheria.

2. Persons reacting negatively to this test usually contain at least $\frac{1}{10}$ unit of diphtheria antitoxin per cubic centimeter of serum, and this amount of antitoxin is probably sufficient to protect against infection.

3. Persons reacting weakly or strongly positive usually contain

less than $\frac{1}{10}$ of a unit of antitoxin per cubic centimeter of serum or none at all. These persons may be regarded as susceptible to diphtheria and in the event of exposure to infection should be passively immunized with an injection of antitoxin.

4. About 40 to 50 per cent. of children ranging from one to fifteen years of age react positively to the toxin test; this means that the preliminary use of the toxin test will eliminate the necessity of administering prophylactic doses of antitoxin to about 50 per cent. of children.

5. The toxin reaction indicates that the immunity conferred by an injection of antitoxin begins to disappear after ten days and has generally passed away entirely after four weeks.

6. The increased susceptibility of persons with scarlet fever to diphtheria is shown by the toxin reaction; even after the injection of antitoxin about 10 per cent. are susceptible within ten days.

7. According to the toxin reaction the immunity conferred by an attack of diphtheria is usually of short duration or entirely absent.

8. The most practical application of the toxin reaction consists in applying the test as a preliminary measure to all persons who have been exposed to diphtheria and immunizing only those who react positively.

February 11, 1915.

Papilloma of the Cornea Showing its Progress Toward Epithelioma.

GEO. E. DE SCHWEINITZ, M.D.

February 25, 1915.

Disciform Keratitis.

GEO. E. DE SCHWEINITZ, M.D.

A very rare specimen. Clinically there is a small gray disc in the middle of the cornea, separated from its transparent margin by a gray, sharply marked border. The superficial layers of the cornea are smooth.

February 25, 1915.

Tuberculosis of the Uvea.

GEO. E. DE SCHWEINITZ, M.D.

February 25, 1915.

Cysticercus in the Vitreous.

GEO. E. DE SCHWEINITZ, M.D.

February 25, 1915.

Keratitis Lagophthalmo.

GEO. E. DE SCHWEINITZ, M.D.

February 25, 1915.

Kerato Mycosis.

GEO. E. DE SCHWEINITZ, M.D.

A rare form of corneal ulceration due usually to the aspergillus nigricans has also been found. Similar corneal affections due to the verticillium graphii have been described.

February 25, 1915.

Sarcoma of the Limbus.

GEO. E. DE SCHWEINITZ, M.D.

February 25, 1915.

Cystic Nevus of the Limbus.

GEO. E. DE SCHWEINITZ, M.D.

February 25, 1915.

Epithelioma of the Cornea.

GEO. E. DE SCHWEINITZ, M.D.

February 25, 1915.

Myxosarcoma of the Eyelid of Unusual Dimensions.

GEO. E. DE SCHWEINITZ, M.D., AND EDW. A. SCHUMWAY, M.D.

February 25, 1915.

Glioma of the Retina.**GEO. E. DE SCHWEINITZ, M.D.**

Shows the characteristic round-cell formation and the rosettes described by Flexner, Wintersteiner and others.

*February 25, 1915.***Clinical and Pathological Report of a Case of Splenomegaly.****B. F. STAHL, M.D., AND B. LUCKE, M.D.**

Patient has been ill about three months with cough and weakness as chief complaint. Early in his illness he entered a hospital in Washington, D. C., where he was told he had a large spleen and was diagnosed Banti's disease. He has gradually been getting worse, with dyspnea and distention of the abdomen as added symptoms.

The spleen extends almost to the median line and to the crest of the ilium; is hard, smooth, and not tender. The liver reaches about two fingers below the costal margin, and is smooth and not tender. Ascites is present.

The *ascitic fluid* was very turbid; no tubercle bacilli; excess of lymphocytes; few endothelial cells.

Fluid from pleural cavity was bloody; contained no tubercle bacilli.

The Wassermann reaction on the blood was weakly positive; on the spinal fluid it was negative. *February 25, 1915.*

Sugar Fermentation by Diphtheria Bacilli.¹**E. L. MOSHAGE, M.D., AND J. A. KOLMER, M.D.**

(From the Laboratory of the Philadelphia Hospital for Contagious Diseases.)

The object of this study was mainly threefold:

1. To study acid production with various carbohydrates with cultures of diphtheria bacilli from various sources, of varying morphology and of known virulence as determined by animal inoculation tests.

2. To study the practical value of these tests in aiding differentiation among the members of the diphtheria group.

¹ Printed in full in the Journal of Infectious Diseases, 1915.
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3. To study the relation of diphtheria toxin to these carbohydrate splitting ferment.

SUMMARY. 1. Acid production in Hiss's serum water media by diphtheria bacilli was most marked with dextrose, dextrin, levulose, galactose, and maltose.

2. A small percentage of cultures also produced acid with saccharose, but none with mannite.

3. Glandular types of bacilli generally produced acids more frequently than the solid types, and long solid types more so than the short varieties.

4. In general the time of appearance and degree of acid production from carbohydrates were somewhat parallel with the degree of virulence of the diphtheria bacilli.

5. Acid production tests upon different carbohydrates are not sufficiently regular to be depended upon in determining the harmfulness of a given culture.

6. Acid production tests are of most value in studying and classifying the solid varieties of the diphtheria-like bacilli. Solid non-virulent bacilli producing no acids with sugars are classified as the pseudo or Hoffmann types; those producing acid as non-virulent diphtheria bacilli.

7. Non-virulent diphtheria-like bacilli from the conjunctiva have been found capable of fermenting not only saccharose but also other sugars as well including dextrin and dextrose.

8. Diphtheria toxin itself appears to take no part in the fermentation of carbohydrates; this action is probably due to separate secretory products or ferment of the bacilli. The production of these ferment bears some relation, however, to the inherent virulence of diphtheria bacilli rather than to their vegetative powers; the ferment may represent offensive factors of the bacillus concerned in producing a suitable environment and nutrition for the bacilli.

February 25, 1915.

The Nature and Clinical Significance of the Pseudodiphtheria Bacilli.

HERBERT FOX, M.D.

The object of this work was to learn the frequency with which organisms of this group may be isolated from human infections; to decide upon criteria from which to judge their etiological importance; to explain their occurrence in the blood stream, and test out the suggestion that they are altered Klebs-Loeffler bacilli.

The classification of the diphtheria group as given by Emerson is quite convenient, namely, diphtheria bacilli, avirulent diphtheria bacilli, pseudodiphtheria bacilli, and the Hoffman type.

The first is the only one to produce soluble toxins and to be pathogenic regularly. The rest never produce more than a mild infection and only exceptionally a fatal bacteremia. They are said to produce aggressions.

Pseudodiphtheria organisms are found normally in the eye, nose, ear, throat, vulva, vagina, male genitalia, urine, and skin, especially in the presence of eruptions.

They are found commonly in otitis media and associated with the gonococcus in specific urethritis.

The question of the unity or duality of the diphtheria organism is not yet settled. True, Klebs-Loeffler and avirulent forms biologically identical with them may easily be variants. Pseudo forms are distinct in many ways, and it seems that most observers believe them different from the former two. The Hoffman type is surely different.

It is suggested many times in literature that pseudodiphtheria forms are derived from true Klebs-Loeffler by mutation, or, as I prefer to call it, degradation. Klebs-Loeffler bacilli are present in the blood, organs, and urine in many cases of diphtheria. May they be changed by blood, lymph or lymph glands? When isolated they show slight biological and morphological differences from strains isolated from the throat in diphtheria. There is no evidence in literature to show mutation of Klebs-Loeffler to pseudo forms or *vise versa*, using cultural passage or immunological methods.

Pseudo forms may be found in conjunctivitis, leprosy, and in various adenopathies, especially Hodgkin's disease. Twenty cases were mentioned from which pseudo forms were found and 3 cases of pseudodiphtheria angina. In only 1 of the 20 could immunity reactions be obtained to indicate that the pseudo form was causative. In 5 cases they were isolated from the blood stream, in 2 of which they were not in the pharynx at that time.

Pseudodiphtheria bacilli are probably different from virulent and avirulent forms of Klebs-Loeffler; it has been suggested that they are degraded varieties, but no proof is to be found. They are very common in infective processes, give immunity reactions when causative but they are rarely proven to be so. They must be present in the body without causing infection, because they can be isolated from the blood in the absence of localized disease, or immunity reaction. Only 4 well-established cases of pseudodiphtheria infection are on record.

February 25, 1915.

Specimen from a Case of Acute Miliary Tuberculosis, Showing
Caseous Infiltration of Both Suprarenal Glands.

JOSEPH MC FARLAND, M.D., AND C. B. FARR, M.D.

February 25, 1915.

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Source of Pseudodiphtheria Forms in the Body with
Experiments on Mutation.

HERBERT FOX, M.D.

Clark and Graham-Smith have shown that normal and immune blood has no effect in altering Klebs-Loeffler or pseudo forms. Since diphtheroids are found in glands the seat of Hodgkin's disease, or hyperplasia near inflamed joints may the lymphatic organs be the seat of mutation? Experiments with serum, leukocytes, sodium, oleate, aërobic and anaërobic serum dextrose agar with and without lymph glands, lymph gland agar and lymph glands as culture media, failed to alter a known Klebs-Loeffler in morphology or virulence. Immunization of dog and cultivation of the glands was also negative. The criteria of mutation of this known Klebs-Loeffler was to be loss of virulence with characteristic anatomical changes, the appearance of a saccharose splitting ferment and permanent alteration of morphology. These negative experiments are part of the work to explain the source of diphtheroids especially as related to adenopathy.

February 25, 1915.

Experimental Investigations of the Protozoa, Especially in
Regard to African Lethargy.

JOSEPH MC FARLAND, M.D.

Most valuable information concerning these diseases followed the introduction of the experimental method of investigation into medical science. Malarial fever had doubtless been known as a disease characterized by chills, fever, and sweats for several thousand years, and that up to 1880 of the Christian Era, scarcely anything was added to this knowledge except that Peruvian bark furnishes the quinine at present used to cure the disease. This was not a discovery of science, however, but the appropriation of knowledge arrived at by American savages.

In 1880 Dr. A. Laveran discovered the plasmodium, the parasite that causes the disease, and fifteen years more passed before the next advance was made.

In 1890-95 Dr. R. Ross applied the experimental method to the study of the disease, and by experiments upon animals—the animals used in this case were mosquitoes and sparrows—he and others arrived at complete knowledge of the disease in about ten years. It is quite fair to say that with the single exception of the value of Peruvian bark, more was learned about malarial fever in those ten years than in thousands of years before.

Following in the footsteps of the pioneers in this kind of research came those who studied sleeping sickness. It is a disease of equatorial Africa that kills millions of people by making them become more and more sleepy until they eventually go to sleep never to wake up again but to starve to death in unconsciousness. This disease has been known since 1803, when Dr. Winterbottom described it, but from the time of his description until fifteen years ago nothing was learned. Then the experimental method was applied, and through experiments upon many of the lower animals, we now know that it is caused by a trypanosome, that infection is caused by the bites of certain tsetse flies, and that an arsenical drug called atoxyl will cure early cases. Prior to these discoveries every case was doomed to inevitable death. Now a large percentage of the cases may be cured. But more than this, we know definitely how to prevent malarial fever, and this has been proved at Panama, and we are in the position to learn how to prevent sleeping sickness, though to do so will require future experimentation on animals.

March 11, 1915.

**Experimentation in the Advance of the Study of Nervous
and Mental Disease.**

D. J. McCARTHY, M.D.

March 11, 1915.

**The Role of Experimentation in the Development of Modern
Medicine as Illustrated in the Crusade Against Tuberculosis.**

LAWRENCE F. FLICK, M.D.

Documents now coming to light show that in the far East, before the days of which knowledge comes to us by written history, the disease which we know as tuberculosis was universally recognized as a contagious disease, and that customs, habits, and laws were predicated upon this knowledge. The truth which was then the property of all was lost to the world for reasons about which we can only speculate. Our most plausible explanation of this loss is that the truth which was known at that time was an abstract truth and not a concrete truth.

Koch's discovery of the tubercle bacillus was a much more complicated process than merely seeing that microorganism and proving that it was alive. It was necessary for Koch to prove that the tubercle bacillus alone was the cause of tuberculosis and that nothing else could cause the disease. To do this he had to pass the microorganism through animals of various kinds again and again

each time, proving that he recovered from the animal which he used for his experiment exactly the same microorganism which he had put into it, and that each time the microorganism produced the same tissue changes in the animal which he used, no difference how far removed from the original source of his seed supply he carried the microorganism in his experiments. Animal experimentation was absolutely necessary for proving that his microorganism was a living thing subject to the laws of living things, namely, that it would be born, that it would grow, that it would reproduce itself and that it would die. Vivisection was necessary for identifying the microorganism as the actual cause of tuberculosis, for learning its biology and wresting from nature the secrets about it which enable us to stamp out tuberculosis. There is no other way except that of vivisection in which a finite being could have gotten the concrete truth about tuberculosis which we now possess and which we can pass to future ages as a precious heritage.

Moreover, Koch's great concrete truth would have been lost in his own laboratory except for animal experimentation. The world declined to receive it without demonstration. It had to be demonstrated everywhere. Clear as was Koch's thesis on the etiology of tuberculosis, unanswerable as was every argument which he made in that thesis, teachers of medicine in every part of the world rejected the concrete truth which he revealed in it until it had been demonstrated before their own eyes either by themselves or by others. This is the conservatism of human nature. It is useless for man to quarrel with his own nature and intellectual makeup. He must accept it as it is and use resources at his command for progress and search for knowledge.

What has come to mankind out of vivisection as exemplified in the crusade against tuberculosis is duplicated in what has come to the animal kingdom. Animals of every kind on the surface of the earth, in the heavens above and the waters below, have been sorely afflicted with tuberculosis from time immemorial. The existence of the disease among domestic animals has already been greatly reduced since the tubercle bacillus was discovered, and it will ultimately be exterminated from the animal kingdom. The suffering which animals have been spared through what has been accomplished exceeds the suffering which has been inflicted upon animals for the acquisition of the knowledge for accomplishing it as the sun exceeds the moon in size and brilliancy.

Moreover the suffering which has been inflicted upon animals for getting this knowledge is much less and much more benign than that which mankind, the antivivisectionist included, inflict upon animals daily in all parts of the world in perfect accord with the conventionalities of life.

It is extremely difficult for us now living to realize what has

accrued to us from vivisection because we cannot compare things as they now are experiencing them in our own persons with things as they were merely reading about them. An abstract truth expressed in figures makes little impression on the mind; and yet the truth which peeps out of our mortality statistics in recent years challenges the incredulity of the most skeptical. Let us take our own city, Philadelphia. In 1862 our population was 587,227 and our deaths numbered 13,864; in 1892 our population was 1,096,310 and our deaths numbered 24,305; in 1914 our population was 1,651,132 and our deaths numbered 26,941. As will be noticed, the great reduction in our death rate has been since 1892 in a period of twenty-two years. The tubercle bacillus was discovered in 1882.

Antivivisectionists may say that what has been accomplished in the prevention of disease could have been accomplished without vivisection as well as with vivisection, for all of it was brought about by the application of common sense to the habits of the people and to the practices of life. Theoretically this may be true; practically it is not. Concrete truth in the form of accurate knowledge of the causes of disease was necessary as the mainspring of action and since vivisection was the means of finding the concrete truth it necessarily was the foundation stone of all that followed. Preventive medicine as we know it, and as it has benefited us, is the outcome of an evolution of a psychical force the beginning of which was formed in vivisection.

The propaganda of antivivisectionists stands in the way of legalization of vivisection. It seeks to prevent vivisection and if it cannot prevent it then to regulate it. The efforts of antivivisectionists to prevent vivisection disqualify them as regulators of it. Surely no one opposed to a thing is fit to say how it shall be done. Besides the psychical forces which actuate antivivisectionists disqualify them. No ideas come so befuddled from the human mind as those which are formed from observations focussed upon the brain through the screen of sympathy. Antivivisectionists look upon everything in life through their sympathy for animals. Could the world trust them to regulate a matter which means as much for human happiness as does vivisection? Would it be possible for them to reach rational, sane conclusions upon this subject?

March 11, 1915.

A Rapid and Accurate Method of Microscopic Localization.

PHILIP ATLEE SHEAFF, M.D.

Essential features of this method consist of a circle drawing attachment connected to the multiple nose piece of the microscope,

capable of inscribing upon a "master slide" a circle of such diameter and in such location that when the objective is thrown into position this circle will be concentric with its centre and just fit within the borders of its field, and occupying the same relative position upon the "master slide" as the object does upon the specimen slide.

A "pilot line" connects the circle with the upper margin of the slide for rapid reference.

By means of a stop the two slides become interchangeable upon the stage.

The following points are claimed: rapid in performance; precise results; permanent records; useful with or without a mechanical stage; enables specimens so registered to be placed under one or more microscopes; records an object wherever located, with or without a cover glass.

March 25, 1915.

Squamous-cell Carcinoma of Cervix Uteri.

H. J. HARTZ, M.D.

Uterus measures 8 x 5 x 4 cm. It is symmetrical. Cervix shows ulceration with irregular margins. The base of the ulcer is of dark red color and is 0.3 cm. in width, but encircles entire external os. The tissue is friable and infiltrates to slight degree the cervical structure.

March 25, 1915.

Squamous-cell Carcinoma of Cervix Uteri.

H. J. HARTZ, M.D.

Uterus measures 10 x 6 x 5 cm. Cervix is taken up by a new growth limited to margins of external os and mucosa of portio-vaginalis. It is of dark reddish color of friable consistency and infiltrates musculature irregularly to a shallow depth. The growth around external os shows necrosis with ulceration to a moderate degree.

March 25, 1915.

**Multiple Perforations of Chest Wall in Empyema
(Empyema Necessitatis).**

A. C. MORGAN, M.D., AND E. H. FUNK, M.D.

Jennie S., admitted to the Tuberculosis wards of the Philadelphia General Hospital, July 8, 1913. Ill health for a year. Onset of

present illness six weeks prior to admission, with pain and pressure in left chest. Swelling, limited to the breast area was present, increased when the patient sat up or coughed. Crepitation was present over the mass but not beyond. Pressure reduced the swelling. The fingertips could be inserted in the openings in the third and fourth interspaces and gave an impulse on coughing. Wintrich's change of note was obtained below the clavicle. Muffled tympany was present in the third and fourth interspaces and flatness obtained below these points. Occasionally there appeared amphoric breathing and metallic rales over the affected area. The coin test suggested a cracked-pot note instead of a clear metallic tone. The right border of the heart was one inch to the right of the sternum. Patient died in pulmonary edema on July 18, 1913.

March 25, 1915.

(1) Tumor of Mediastinum and Pericardium; (2) Microscopic Sections of Uterine Fibromyomata.

A. G. ELLIS, M.D.

(1) A heart was exhibited showing universally adherent pericardium due to tumor metastases in the shape of numerous small nodules in the adhesions. There is a tumor mass (primary?) in the mediastinum with involvement of the right primary bronchus and a small portion of the lung. The heart muscle is not invaded though there are tumor cells in veins within the myocardium. There was one small metastatic growth in the skin of the abdomen and one in the left kidney. Microscopically the growth is not typical but is probably an endothelioma.

(2) Microscopic sections of two fibromyomata of the uterus were shown. One has a small, well-circumscribed, fibroma developed within it. The other is a small nodule in which the fibrous tissue has almost entirely replaced the muscle constituent, apparently by secondary overgrowth.

March 25, 1915.

Squamous-cell Carcinoma of Cervix Uteri.

H. J. HARTZ, M.D.

M. C., aged twenty-four years; two pregnancies terminated in abortion. Specimen is in two parts. First consists of uterus, tube, and ovary. The uterus measures 7 x 4 x 3 cm. Cervix is flared and taken up by a new growth of mushroom appearance. The growth is 5 cm. in diameter and replaces the entire portio vaginalis; it is friable, reddish with mottling of black. The centre portion

is softened and suggests necrosis. The growth extends to the internal os but does not break through uterine musculature. Second part of specimen is gland removed from pelvis and is 3 cm. in diameter. Cut surface is grayish. Microscope shows cervical growth to consist of masses of squamous epithelial cells and a rather scanty fibrous stroma. At points there are small hemorrhages into the tumor masses.

The growth from pelvis seems to be lymph node but the lymphatic tissue has been largely obscured by the growth. Many of the cell masses show spaces in the centre due to degenerative or necrotic changes.

March 25, 1915.

Squamous-cell Carcinoma of Cervix Uteri.

H. J. HARTZ, M.D.

G. D., aged thirty-six years; five pregnancies, five labors. Specimen consists of uterus and appendages. The uterus measures 8 x 6 x 4 cm. The cervix is taken up by a new growth, which is friable, of dark reddish color and infiltrates wall to one-half thickness. It destroys entire portiovaginalis and extends upward to internal os.

The microscopic examination shows cervix infiltrated by a new growth of squamous epithelial cells embedded in a fibrous stroma. In a few of the masses are pearls.

March 25, 1915.

The Result of Calcium and Parathyroid Medication in Tuberculous Guinea-pigs.

R. C. ROSENBERGER, M.D., AND P. PELOUZE, M.D.
(By Invitation.)

To a number of known tuberculous guinea-pigs, calcium lactate 1 gr., parathyroid gland $\frac{1}{80}$ gr., and a mixture of these drugs were given. It was found that the gain in weight was far above the average of control pigs.

In the cases of combined drug administration the weight gain equalled $\frac{3}{4}$ the sum of the gains of 2 pigs given the drugs separately.

March 25, 1915.

Specimen of Tuberculosis of the Brain.

ERWIN D. FUNK, M.D.

March 25, 1915.

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Aneurysm of Undefended Space.

ERWIN D. FUNK, M.D.

March 25, 1915.

Specimens of Hypoplastic Kidney.

ERWIN D. FUNK, M.D.

March 25, 1915.

**A Study of the Gastric Residuum in Over One Hundred
Normal Cases.¹**

BY CHESTER C. FOWLER, M.D., MARTIN E. REHFUSS,
M.D., AND PHILLIP B. HAWK, M.D.

(From the Department of Physiological Chemistry of the Jefferson Medical College.)

By means of the fractional tube devised by one of us, a careful study was made of the gastric residuum found in the fasting stomach of normal healthy students. On every occasion the time employed was approximately 8 o'clock in the morning, and the tube was very slightly lubricated and swallowed without the addition of water. The residuum was aspirated while the subject was on his back, and in right- and left-sided positions. From a thorough chemical study of the material removed the following conclusions seem justified:

1. The average volume of material found in the normal fasting stomach of over one hundred cases was 52.14 c.c. This is distinctly greater than the commonly accepted, normal limit of 20 c.c., and is to be explained by the more perfect technic employed.
2. In every instance the residuum had all the qualities of a physiologically active secretion.
3. We pointed out that it is our belief that the gastric glands are never inactive, and cite experiments to demonstrate that even in the absence of normal stimuli (food, psychic, etc.), a secretion appears.
4. There is definite relationship between the character of the residuum and the character of the gastric secretory response to stimulus, such as a test meal for instance.

¹ Complete article was published in the Journal of the American Medical Association, September 18, 1915, lxxv, 1021.

5. From the standpoint of osmotic pressure, there is a constant tendency toward the formation of a secretion in the stomach.

6. Both colorless and bile-colored residua occur and the same may be found in the same individual.

7. The colored residua occur more frequently in higher acidities and *vice versa*, a fact which is explained by the greater frequency of regurgitation in the former condition. This regurgitation has for its purpose partial neutralization of the high acid contents.

8. Total and free acidity vary with one another. It is pointed out that free acidity was rarely encountered until the total acidity exceeded 10. The averages in this series of studies were 29.9 total acidity and 18.5 free acidity. The value of acid figures over 70, with an increased residuum is emphasized as of diagnostic value.

9. There is a definite relationship between the quantity of pepsin and the total acidity for low acid values. As high acid values are approached, this relationship disappears.

10. Trypsin was found by an improved method to be almost constantly in the residuum. It is shown to be inversely proportional to the free acidity. This is explained by the more complete closure of the pylorus in high acid conditions.

11. The average cryoscopic index of —.470 as compared to the index of the blood —.560, gives evidence of a tendency for osmosis of material to take place from the blood into the lumen of the stomach.

12. High acidities are shown by comparison of the cryoscopic index and specific gravity data, to be accompanied by a throwing out of solution of certain molecules, the character of which is unknown at the present time.

13. The residuum is one of the lightest fluids of the body, having an average specific gravity of 1.0056. This point is not without significance.

Finally, it should be emphasized that the older methods of obtaining the residuum were defective, inasmuch as it has been adequately demonstrated that they do not empty stomach. (Harmer and Dodd, *Archiv. Int. Med.*, November, 1913, pp. 488.)

March 25, 1915.

A Study of the Fabric Towel from a Sanitary Standpoint.

RANDLE C. ROSENBERGER, M.D.

Towels taken from stores, households, and from hampers (which had been in use for from one to several days), besides new and laundered ones, were soaked for a half to two days in sterile water and then centrifugalized.

This showed the amount of dirt which accumulated upon these

towels. In a 15 c.c. centrifuge tube a towel (which had been soaked in about 100 c.c. of water and had been in use but one day) showed a deposit from $\frac{1}{8}$ inch to $\frac{1}{4}$ inch in depth, varying in color from a light gray to a black. Examination of this sediment showed, besides the dirt, enormous numbers of epithelial cells.

Another set of experiments consisted of cutting out a small piece of the towel, about 1 cm. in diameter, and soaking it in 10 c.c. of bouillon for twenty-four hours, then taking a fractional part of a cubic centimeter and make an agar plate to determine approximately how many bacteria were present to the cubic centimeter.

As many as several million colonies developed, which were made up principally of spore-bearing bacilli, cocci, and putrefactive bacteria.

Towels which had been in use in the skin ward of a large hospital for twenty-four hours were soaked in sterile water, and in two cases of ring-worm, soaked in a weak solution of caustic soda.

In the deposits from these towels enormous numbers of epithelial cells were found, many cocci and the spores of the ringworm fungus were demonstrable. Five towels were obtained from tuberculous patients, placed in a clean jar in a solution of antiformin (about 500 c.c. of a 3 per cent. strength) and shaken and kept there for twenty-four to thirty-six hours. Centrifugalization threw down an enormous deposit of a black color. On two occasions about 3 to 4 c.c. of this deposit were inoculated into the subcutaneous tissue of a guinea-pig and in each instance a thick caseous pus developed within two weeks' time, in which typical tubercle bacilli were obtained.

It might be said in this connection that on at least one of the towels of the tuberculous patients evidences of dried mucus were present, showing that expectoration into towels is nothing uncommon.

In the new towels and laundered towels treated with sterile water and inoculated into broth, a growth developed usually of a spore-bearing bacillus resembling bacillus subtilis.

The technic used in the studies consisted in taking a glass cylinder, stuffing the towel in and then pouring the sterile water or antiformin solution into the cylinder.

In the case of the new towel or laundered towel a small-sized clean museum jar was used.

CONCLUSIONS. Small individual towels should be used which should, in cases of skin diseases or contagious diseases, be placed in proper receptacles and treated with some disinfectant solution and sterilized with steam under pressure.

Tuberculous patients should be prohibited from coughing or expectorating into their towels, for the reason that when the towel is shaken by the patient the bacilli, if present, would be spread broadcast. All towels from tuberculous patients should be sterilized during washing process.

Bacteria found in these studies were made up of staphylococci, sarcinae, mould fungi, proteus group, bacillus putrificus coli, streptococci, sporiferous bacilli of the subtilis group, spores of the ring-worm fungus (*trichophyton microsporon*), tubercle bacillus and many unidentified organisms.

March 25, 1915.

The Wassermann Test in Congenital Syphilis.

JOHN A. RODDY, M.D.

In this paper, investigations regarding the occurrence of syphilis, especially congenital syphilis and syphilis in child-bearing women, reported by J. W. Williams, Browning and McKenzie, Letulle, Krumbhaar and Montgomery, Piper, Churchill, Lucas, Cannata, Boas and Thomsen, Wolf, and Dean, and embracing 12,427 cases are reviewed. The author reports 315 cases of occult syphilis and 11 cases of congenital syphilis of his own, with 224 cases of congenital syphilis from the Philadelphia General Hospital (Rosenberger and McNitt.)

The conclusions drawn are as follows:

At least 12 per cent. of children surviving the first three months of life have congenital syphilis.

The disease very often exists without any characteristic clinical signs. When congenital syphilis becomes active the pathological state is seldom recognized as syphilis except by ophthalmologists and Wassermann tests.

During the first year of life the Wassermann test is of less value than it is thereafter.

After the first year of life the Wassermann test is regularly positive when congenital syphilis is active.

When congenital syphilis is dormant the Wassermann reaction is not always positive.

The luetin test, as a means of diagnosticating congenital syphilis deserves much careful study.

The Wassermann test should be part of the routine examination of all hospital patients.

March 25, 1915.

A Study of the Protein Content of the Gastric Juice.

J. ALEXANDER CLARKE, M.D., AND MARTIN E. REHFUSS, M.D.

The authors studied the protein content of the gastric juice by the method of Wolf and Junghens. They found that the pure gastric juice secreted after water stimulation gave a very low

protein content never over 1:40 in normal individuals. They then made a study of the Ewald meal estimating the quantity of protein elaborated by the action of an artificial gastric juice *in vitro*. A curve was constructed recording the findings at intervals which they called the protein curve. This was compared with the curve obtained from the examination of specimens obtained by means of the fractional tube at intervals. Specimens were obtained from many normal and pathological subjects. *If the protein content exceeded the quantity obtained from the action of the gastric juice in vitro on the Ewald meal, it could be definitely stated that the protein came from other sources than the proteins of the bread ingested.*

The authors pointed out that in benign achylia there was practically no elaboration of protein. This was in marked contrast to the achylia characterizing certain cases of carcinoma in which there was a distinct increase in the elaboration of soluble protein out of all proportion to the acid curve. This increase in the protein was most pronounced as digestion went on, and the authors consider the type of curve characteristic of carcinoma. They pointed out that the test is of value in direct proportion as the curve approaches an achylia and insist on the necessity of a fractional examination.

In ulcer, they found a marked increase of protein in the early stages of digestion, a circumstance in the light of present findings which is somewhat difficult to interpret. They point out the necessity of differentiating the high protein content occasionally encountered from the ingestion of albuminous sputum, protein retention in stenosis, and the possibility of high protein content in intragastric bleeding such as was seen in several cases of purpura and in achlorhydria hemorrhagica gastrica.

March 25, 1915.

Carcinoma of the Stomach with Metastasis of the Liver and Lung.

DAVID RIESMAN, M.D. AND JOSEPH McFARLAND, M.D.

April 8, 1915.

An Enterolith from the Human Cecum.

C. J. STAMM, M.D., GEO. H. MEEKER, M.D., AND
Jos. McFARLAND, M.D.

In March, 1912, the patient complained of soreness in the right inguinal region, and in her endeavor to locate the pain found a rounded, freely movable mass, the size of an egg, in the right iliac region, tender to touch.

Vaginal and rectal examination failed to reveal anything abnor-

mal. Abdominal palpation revealed a large, rounded, freely movable mass in the right iliac region; mass tender to touch.

An x-ray examination by Dr. George E. Pfahler, determined that the mass was an enterolith in the cecum.

The patient had been constipated since childhood and during the two years immediately preceding this attack she had taken from one to two ounces of milk of magnesia daily.

Treatment consisted of glycerine and olive oil enemata taken twice daily in the knee-chest position.

On June 3, 1912 the enterolith was removed piecemeal from the rectum, as she could not expel it.

A chemical examination of the enterolith showed the following:

"Consists mainly of magnesium phosphate also calcium phosphate, fats, traces of iron, minute seeds, and indefinite organic matter."

This is the first case on record of positive diagnosis of enterolith with recovery of enterolith without operation.

April 8, 1915.

A Convenient Form of Easily Extemporized Tube-rack for
Wassermann Tests.

J. HAMILTON SMALL, M.D.

April 8, 1915.

Congenital Malformations of the Human Body Collected during
the Last Ten Years.

JOSEPH MFARLAND, M.D., AND E. A. CASE, M.D.

(1) *Fœtus Papyraceus*. A case of twins in which one developed normally, while the other appeared to cease growth at the fourth month and then suffer compression and devitalization until it was flattened to a thickness of only one to two centimeters.

(2) *Intra-uterine Amputations*. Stillborn infant with intra-uterine amputations of the right hand and the right foot; otherwise normal.

(3) *Hereditary and Congenital Defects of the Digits*. This child was born alive but died shortly after. It has deformed hands and feet much like its father who would not submit to careful examination. Each hand has but one digit, each foot but two.

(4) *Congenital Hypertrophy of the Outer Three Toes of the Left Foot and Outer Side of the Left Lower Leg*. A plaster model was shown of the left foot of a twelve-year-old boy whose outer three toes were enormously hypertrophied, the little toe being of a bulk of about eight times as great as the great toe. The hypertrophy

was shown by x-ray studies to embrace the osseous as well as the soft tissues of the toes. It also embraced the soft tissues of the outer side of the foot and ulnar side of the left leg to the knee. This case is shown through the courtesy of Dr. James P. Mann.

(5) *A Case of Microcephalia, Microphthalmos, Hare-lip, Cleft Palate, etc.* This child apparently born at term shows the deformities mentioned above, together with a remarkably asymmetrical and peculiar development of the brain which has been or will be described and published by Prof. Heisler.

(6) *Anencephalia from Sagittal Cranioschisis.*

(7) *Anencephalia from Occipital Cranioschisis.*

(8) *Anencephalia from Occipital and Spinal Craniorachischisis.*

(9) *Encephalomeningocele.* This infant born at term and having an otherwise normal appearance, had projecting from the posterior cranial region, a sac like an enormous caput succedaneum, of a size about equal to the rest of the head. When dissected, it proved to be an encephalomeningocele following internal hydrocephalus. This case is presented through the courtesy of Prof. George M. Boyd.

April 8, 1915.

Syrphid Larva Passed Alive from the Human Intestine.

JOSEPH McFARLAND, M.D.

The Syrphidæ comprise a family of dipterous insects popularly known as "hovering flies," often seen about flowers in the summer. The smaller ones are yellow and brown and black, the larger ones more brown. Their relation to the flowers, whose nectar and pollen they love, makes them commonly mistaken for bees. The particular larva received through the kindness of Dr. Van Etten, came in a small bottle of clear fluid that was supposed to be a preservative. It was in excellent condition and its characters could easily be distinguished. Believing it to be safe, it was laid away until a more convenient time for study and reporting, and was not seen until a few weeks ago. It was then found in an advanced state of decomposition, much destroyed, and foul smelling.

Attempts were made to retrieve the damage, but little more than the integument of the larva is to be seen. It measures 2 cm. x 8 mm. in size. It is cylindrical, tapering at the anterior end, where there is a pigmented head, and bluntly tapering posteriorly, where the characteristic appendage is situated. This is a long slender tail, consisting of two joints one of which telescopes into the other so that it can be shortened or lengthened. When fresh, this tail was rigid; at present it is curled.

There are eight pairs of false feet, in the form of bristly tubercles. On each side of the head there are dark tubercles looking like eyes. The tail was about one and one-half times the length of the body.

The larvæ live in decaying vegetation—leaf mould, etc., and are rarely seen. How one of them could find its way into a human being and be passed from the bowel in the month of December is difficult to understand. It is possible that lettuce, cabbage, banana or some other vegetable food harbored it when small and that after being swallowed it grew to its present size.

Nothing is said about any symptoms resulting from its presence. The general habits of these larvæ, however, would not suggest that any pathologic disturbance would be effected, as the larvæ are vegetarians.

April 8, 1915.

Sarcomatous Change in a Fibroleiomyoma.

J. W. KENNEDY, M.D., AND EUGENE A. CASE, M.D.

Mrs. L. McC., aged fifty-two years. The patient had suffered from prolapse of the uterus for two years, with pain in the lower part of the abdomen. Menstruation was painful and irregular, the flow lasting from eight to ten days.

The gross examination of the specimen showed nothing beyond multiple fibroids, with no suggestion of malignancy.

Microscopic examination of one of the tumors revealed the beginning development of malignancy. Many of the cells are larger than their fellows: have large, irregular, deeply stained nuclei, showing a reversion to the embryonal type.

April 8, 1915.

A Case of Intestinal Sarcophagine Myiasis.

JOSEPH McFARLAND, M.D.

It is not impossible that the patient had been accustomed to eat foods infected with maggots, and that he had suffered from successive broods of larvæ, but on this point nothing more has been learned. It is furthermore quite interesting to learn that the patient passes these larvæ "in great quantities." How this could happen is as interesting as it is mysterious. There is no pedogenesis among such larvæ as these, therefore each larvæ passed represents a larva swallowed. To pass maggots "in great quantities" therefore the patient must have swallowed the larvæ in correspondingly great quantities, and if his illness that had lasted so long had anything to do with the maggots, he must have been accustomed to swallow them periodically or regularly all that time. This is of particular interest, for the Sarcophagines are ovoviparous flies and produce living maggots. These maggots, of a visible size and actively mobile, must have been swallowed.

The recognition of dipterous larvæ is extremely difficult. It is comparatively easy to assign them to their respective families, but the genera and species are extremely difficult to identify because of their similarity. In all cases of this kind—indeed in all cases in which maggots or larvæ are found—the proper procedure is that followed by Dr. Wohl, who fed the maggots until they pupated, and then carefully bred the imagoes. The flies themselves can be identified far more easily than the maggots and a correct knowledge of the insect may lead to the discovery of the source of the infestation.

April 8, 1915.

Psammo-sarcoma of the Dura.

JOSEPH McFARLAND, M.D.

It is impossible to give any clinical history of this case, as the patient was admitted to the Philadelphia General Hospital too ill to be questioned or examined, and died within twenty-four hours and became a coroner's case.

Through the kindness of the coroner the examination of the body was assigned to me and the specimen to be presented thus secured.

The tumor is a nodular mass springing from the dura of the left hemisphere. It is about 6 cm. long, 3 cm. broad, and 1.5 cm. thick. The bulk of the mass is composed of three closely approximated and partly amalgamated nodes. On the outer side of the dura there are three small nodules each about 0.7 cm. in diameter, and each about 2 cm. from the tumor proper with which they have no connection.

The largest nodule extends completely through the dural membrane and adheres to the skull above.

The surface of the dura near the tumor is slightly hemorrhagic. There is marked cerebral meningitis from which the patient died. Beneath the tumor the cerebral substance, chiefly in the motor areas of the cortex is deeply indented in correspondence with the nodules of the tumor nodules.

Microscopic examination showed spindle-celled sarcoma with many small calcospheres—"psammo-sarcoma.

April 8, 1915.

Large Carcinoma of the Ovary.

J. W. KENNEDY, M.D., AND EUGENE A. CASE, M.D.

Mrs. L. B., aged thirty-nine years. Nine years ago the patient noticed a growth in the lower part of her abdomen, which gradually

increased in size. Menstruation was normal and painless. During the past five years she has had a dark bloody discharge between the menstrual periods. The growth gave rise to no pain, but the patient was constipated and had lost much flesh. The tumor increased rapidly in size during the past few months, and at the time of the operation was the cause of symptoms of intestinal obstruction. The operation was followed by an uneventful convalescence until the fifteenth or sixteenth day, when she died suddenly from apparent dilatation.

Pathological Examination. The tumor measured 36 x 24 x 22 cm., and weighed 9.157 kilos (20.3 pounds).

In shape it is a flattened ovoid with an uneven surface, due to the projection of large rounded eminences. The cut surface shows it to be largely solid, with some cystic areas containing a thick "jelly." The solid areas present considerable necrosis.

Histologically the tumor is composed of small cells, similar to those seen in intracystic papilloma, closely packed together. In many of the areas the cells are grouped about hyaline cylinders. Much of the tumor is necrotic.

April 8, 1915.

Fibrosarcoma of the Mammary Gland.

J. W. KENNEDY, M.D., AND EUGENE A. CASE, M.D.

Mrs. F. C., aged sixty-four years, was operated upon by Doctor Kennedy, January 13, 1914, for a typical carcinoma of the left breast. November 11, 1914, she was again operated upon for a "lump" in the right breast. This had given her pain which radiated down the arm.

Pathological Examination. The breast showed a fairly well-circumscribed nodule measuring 3 cm. in diameter. No metastatic growths could be detected in the axillary lymph nodes.

Histological examination of this nodule proved it to be a large spindle-cell fibrosarcoma with a moderate amount of mucoid change.

The most interesting feature of this case is the occurrence of two forms of malignant disease in opposite breasts within a year.

April 8, 1915.

Congenital Cystic Kidney Removed at Operation.

J. W. KENNEDY, M.D., AND EUGENE A. CASE, M.D.

The patient had had two operations without the removal of the organ. The last operation was necessitated by the presence of

symptoms of intestinal obstruction. After the removal of the kidney he made an uneventful recovery, and at present, one year afterward, is well and able to attend to his work.

The kidney measured approximately 23 x 16 x 13 cm., and fluctuated when palpated. It retained its normal shape more or less, and when sectioned was found to be made up of large cysts filled with a thick "jelly." The stroma was scant in amount.

Microscopic examination shows the cysts to be lined with epithelium, and in the stroma there are tubular structures, some lined with columnar and some with low cuboidal epithelium. There is also an abundant round-cell infiltration of the stroma.

April 8, 1915.

Sarcoma and Carcinoma of the Same Mammary Gland.

J. W. KENNEDY, M.D., AND EUGENE A. CASE, M.D.

The patient, Mrs. F. M., aged forty-six years, began two years ago to have pain in the right breast, with the appearance of "lumps." During the past few months the pain had increased, with discoloration of the skin.

Pathological Examination. The skin of the breast was smooth, and near the nipple a rounded nodule projected which gave to this structure the appearance of retraction. In addition another nodule could be felt by the side of this one. A section of the organ parallel to the skin surface showed two distinct nodules: one a circumscribed whitish firm one and the other a non-circumscribed variegated structure about 5 cm. in diameter. The former measured approximately 3 cm. in diameter and had no apparent connection with the other nodule beyond the accident of position. The axillary lymph nodes showed distinct metastasis which proved to be carcinoma.

Histological examination of the smaller nodule showed a spindle cell fibrosarcoma and of the larger one a typical carcinoma.

April 8, 1915.

Gastric Ulcers.

EUGENE A. CASE, M.D.

1. From the service of Doctor William L. Rodman, of the Medico-Chirurgical Hospital. The patient, a pullman car conductor, had complained of "indigestion" for one year and a half. On a trip from Chicago to Philadelphia he was suddenly seized, this side of Altoona, Pa., with a severe pain in the epigastrium which became

gradually more severe. He was unconscious and moribund when he entered the hospital and operation was not performed. At the autopsy a perforated ulcer on the posterior wall of the duodenum just beyond the pyloric ring, was found. It was about 1 cm. in diameter.

2. A negro, aged forty years, from the service of Doctor William L. Rodman, of the Medico-Chirurgical Hospital, was sent in because of gastric hemorrhage. At the time of entrance he was unconscious, later becoming delirious, necessitating restraint. Occult blood was found in the feces. No history could be obtained. At autopsy a typical "punched-out" ulcer was found on the lesser curvature, about 5 cm. from the pylorus. In the base of this ulcer there was a dark red clot covering an erosion in a bloodvessel. A probe passed into the pyloric artery came out the opening in this vessel. This branch was of good size. The stomach contained considerable partially digested blood, and there was a quantity in the intestines.

3. Case from the Philadelphia General Hospital, service of Doctor A. C. Morgan. The only history referable to gastric disease was pain in the abdomen and vomiting, with the finding of occult blood in the stomach contents. The patient also had chronic tuberculosis. At autopsy a perforated gastric ulcer was found on the posterior wall, midway between the cardia and pylorus. A few centimeters from the pylorus there was a fungoid carcinoma. The ulcer was ragged in character and had no connection with the carcinoma. The diagnosis of chronic pulmonary tuberculosis was confirmed.

4. A case from the Philadelphia General Hospital showing several typical "punched-out" ulcers. No history referable to gastric disturbance was obtained, as the patient was unconscious.

5. Case of healed gastric ulcer showing a scar 4 x 2 cm., depressed and covered by smooth epithelium, contrasting distinctly with the "velvet" type of the rest of the gastric mucosa. The wall in this region was thickened, and on the peritoneal surface there were dense adhesions.

April 8, 1915.

Bacteria Isolated from Enlarged Glands, Especially in Hodgkin's Disease.

HERBERT FOX, M.D.

(From the Wm. Pepper Clinical Laboratory, University of Pennsylvania.)

Observations upon the bacteriology of adenopathies, particularly Hodgkin's disease, in the latter case upon material obtained by several observers and representing several histological diagnoses, would indicate that there is no single organism corresponding to microscopic diagnoses or clinical conditions; that diphtheroids are

very commonly found in enlarged glands, and that the enlarged glands of arthritis may contain diphtheroids similar to those found in Hodgkin's disease. Isolations are best made upon glands grown on Bordet medium plates, incubated for at least three days.

The glands of Hodgkin's disease contain chiefly diphtheroids, although a few cocci and liquefying organisms have been isolated. The diphtheroids vary both in morphology and biology; some of the more closely related organisms in a morphological sense are different biologically; the reverse is also true. Glands in arthritic cases show in this series as many diphtheroids as cocci. The tuberculous glands are usually sterile. In the sections of glands of frank Hodgkin's no Much granules or Gram-positive rods of the Much type have been found. The diphtheroids of adenopathies are not strongly antiformin-fast and gland tissue should not be exposed to antiformin for more than six hours. It is better to divide them very finely before incubating in antiformin.

April 8, 1915.

Benign Cystic Epithelioma.¹

M. B. HARTZELL, M.D.

The cases of epithelial neoplasm of the skin which have been described under a great variety of names, such as epithelioma adenoides cysticum, benign cystic epithelioma, hydadenome eruptif, syringocystadenoma, etc., may be divided into two groups. In the first group belong the cases reported by Brook, Fordyce and myself under the names epithelioma adenoides cysticum or benign cystic epithelioma; in the second the cases of Jacquet, Török, Neumann and others which have been described as hydadenome eruptif, syringocystadenoma, etc. As these names indicate there is considerable divergence of opinion as to the nature and place of origin of the neoplasm. As to the first group there is a pretty general agreement that they are epitheliomata having their origin in the hair follicles and the basal cell layer of the epidermis. As to the cases of the second group, while all are agreed that they are epithelial, the majority of those who have studied the neoplasm believe that it has its origin in the ducts of the sweat gland. My own view, however, is that the so-called syringocystadenoma has nothing whatever to do with the sweat glands, but is an epithelioma having its origin in the lateral spurs normally present at times in the lanugo hair follicles.

The term "benign" as applied to the lesions of the first group is

¹ Vide papers, American Journal of the Medical Sciences, September, 1902, British Journal of Dermatology, October, 1904, and Journal of Medical Research, March, 1908.

a misnomer, since they are only relatively benign; ulceration and recurrence after extirpation take place in a certain number of cases, as has been shown by Hallopeau, White, Jarisch, myself and others.

April 8, 1915.

Bearings of Industry upon Medicine.

DAVID L. EDSALL, M.D.

April 22, 1915.

Hydromyelia.

ALFRED GORDON, M.D.

Autopsy of the case reported showed the following: a thick scalp; thick calvarium; tense dura; at the base a thin and tense membrane over the chiasm, which when severed, showed a very large opening leading to the lateral ventricles. A very large amount of fluid escaped. The ventricles were extraordinarily dilated, and their walls very thin. The corpus callosum was almost entirely wanting; the corona very small. The basal ganglia were deformed and small. The cerebellum presented a deep cavity on its anterior border. The cord showed a hollow tube from the uppermost segment down to the lower dorsal portion. The cord tissue is enormously disfigured. Microscopically we find besides the cavity a uniform mass of gliomatous tissue around the central canal. Similar tissue and cavity are seen also in the medulla and around the aqueduct of Sylvius. The anterior spinal artery at the level of the cervical segment is totally thrombosed.

May 13, 1915.

Adenoma Hidradenoides Vulvæ.¹

GEO. W. OUTERBRIDGE, M.D.

An unmarried woman aged thirty-nine years, had had for many years a small painless tumor in the anterior portion of the right labium majus, just to the right of the clitoris. Eventually the little growth became somewhat ulcerated and was removed. The specimen consists of an oval bit of tissue covered on one surface by skin, in the centre of which is an area of ulceration. On section the major portion of the specimen is seen to be made up of a nodule

¹ Published in full in the American Journal of Obstetrics, July, 1915.

of yellowish-white, fairly firm tissue, about 2 cm. in diameter. Microscopically this nodule is seen to consist of an extremely complex mass of acini and papillæ, separated by rather thin septa of connective tissue. The cells lining these acini are for the most part arranged in a double layer, the inner layer consisting of sharply defined tall columnar cells, with central nuclei, the outer layer being composed of somewhat less distinct, irregularly oval or cuboidal cells. In suitably stained specimens the connective-tissue septa are seen to contain a very rich network of elastic fibers. In these points the finer structure of the tumor suggests that of normal sweat glands, the tumor as a whole corresponding very closely to those described by Pick and others as adenomata arising from sweat glands, or at least from sweat gland anlagen. The term "adenoma hidradenoides vulvæ" is the one originally applied to tumors of this type by Pick, and is accepted as the one most commonly in use. Eleven other examples of tumors of this type occurring in the vulva have been collected from the literature.

May 13, 1915.

Multiple Intestinal Polyps with Intussusception of Small Intestine.

JOHN A. KOLMER, M.D., AND EMERY MARVEL, M.D.

May 13, 1915.

A Method of Transmitting Known Numbers of Trypanosomes, with a Note on the Numeric Relation of Trypanosomes to Infection.¹

JOHN A. KOLMER, M.D.

(From the Department of Dermatological Research, Polyclinic and College for Graduates in Medicine, Philadelphia.)

Briefly, the method consists in securing a definite volume of blood in a blood corpuscle-counting pipet and mixing it with a definite amount of a diluting fluid that hemolyses the erythrocytes, and fixes and stains the trypanosomes. The trypanosomes are then counted by means of a Thoma-Zeiss counting chamber and the number in a cubic centimeter of undiluted blood calculated. With this data at hand, 0.1 c.c. of blood is drawn aseptically from the heart of the seed animal in 0.9 c.c. of a 10 per cent. solution of sodium citrate in normal salt solution. With this blood, dilutions are made in warm, sterile, normal salt solution until a cubic centimeter or a fraction thereof contains the required dilution and number of trypanosomes determined upon for the purpose of infecting a series of rats, or for any other purpose.

¹ Published in full in the Journal of Infectious Diseases, 1915, xvii, 79.

By this method, several series of rats have been infected with increasing numbers of *Trypanosoma lewisi*, *T. equiperdum*, and *T. brucei*, and a study made of the minimal number of trypanosomes in each species necessary for infection, as well as the time of true incubation and duration of life. Well-defined quantitative relations were found with *T. brucei*, less with *T. equiperdum*, and least with *T. lewisi*.

The injection of small numbers of pathogenic trypanosomes lengthens the period of incubation and, in this manner, the duration of life, as dating from the time of infection; but when the parasites once appear in the peripheral blood, the duration of life is about the same, regardless of whether the animal was originally infected with a large or a small number.

May 13, 1915.

Non-Teratomatous Bone Formation in the Human Ovary.¹

GEO. W. OUTERBRIDGE, M.D.

Although the occurrence of little hard nodules, or so-called "ovarian stones," in the human ovary is not exceedingly uncommon, but very little is to be found in the literature concerning the formation of true bone in these organs aside from that found in dermoid cysts and solid teratomata. This is probably due largely to the fact that when such hard nodules are found, it is generally assumed that they represent merely calcareous deposits and no microscopic examination is made. Search through the literature has brought to light reports of but fourteen reasonably well-authenticated cases of true bone formation, not teratomatous, in the human ovary. To these 7 additional cases are added in the present report, all but 1 of these having come under the writer's observation within the space of two years. In all instances, microscopic examination of the hard nodule in question, after thorough decalcification, showed beyond doubt the presence of true bone, and careful examination of sections from numerous other areas in each specimen failed to reveal anything suspicious of a teratomatous process. In most instances the ovaries were not the seat of any kind of enlargement or tumor formation, but in one case the ossification occurred in the wall of a serous cystoma. In most instances the areas of ossification were found in old corpora fibrosa, often surrounded by a zone of calcification, in ovaries associated with pelvic inflammatory disease. In one quite remarkable case the ovary and tube of one side were entirely lacking from their normal situation, the ovary being represented by a little almond-shaped body attached to a tag of omentum at the bottom of Douglas's

¹ Published in full in the American Journal of the Medical Sciences, 1916.

pouch, and consisting on microscopic examination almost entirely of trabeculae of true bone. It seems probable that in all these cases the bone formed is metaplastic in origin, analogous to that which is sometimes formed in old scar tissue in other parts of the body. The condition is therefore best termed "ossificatio ovarii" rather than "osteoma," although the latter designation has been applied to it by several writers.

May 13, 1915.

Complement-fixation in Intestinal Parasitism of Dogs.¹

JOHN A. KOLMER, M.D., MARY E. TRIST, AND
GEORGE D. HEIST, M.D.

(From the McManes Laboratory of Experimental Pathology, University of Pennsylvania, Philadelphia.)

The object of our study was to determine by means of a complement-fixation technic whether absorption of foreign substances with the production of antibodies occurred in dogs infested with the common varieties of intestinal parasites. That production of antibodies may result from superficial infections is shown by the immunological studies in parasitic diseases of the skin by Kolmer and Strickler, in which it was found that in ring-worm of the scalp and favus, by means of a complement-fixation technic, specific antibodies might be detected in the blood serum in a large majority of diseased individuals. In ring-worm particularly the fungus seldom penetrates to the deeper layers of the epidermis and rarely to the corium; hence it may be assumed that soluble toxic substances are produced by the fungus which being absorbed cause the production of antibodies. The encouraging results of this work induced us to undertake a similar study of intestinal parasitism, dogs being selected on account of the frequency with which they are infested and the means offered for controlling the results by frequent examinations of the feces and by autopsies.

MATERIALS AND METHODS OF STUDY. *Antigens.* The following extracts of parasites, secured from dogs at autopsies, were prepared:

1. Salt-solution extract of *Tenia serrata*.
2. Alcoholic extract of *Tenia serrata*.
3. Salt-solution extract of *Dipylidium caninum*.
4. Alcoholic extract of *Dipylidium caninum*.
5. Salt-solution extract of *Ascaris canis*.
6. Alcoholic extract of *Ascaris canis*.
7. Salt-solution extract of *Trichocephalus dispar* (whip-worm).
8. Salt-solution extract of *Strongylus gigas*.
9. Alcoholic extract of *Tenia saginata*.

¹ Published in full in the Journal of Infectious Diseases, 1916, xviii, 88.

Sera. In all, the sera of 172 dogs were examined. As will be pointed out later in this paper, our greatest difficulty in this work was the tendency of dog serum to yield non-specific complement-fixation. For this reason the sera were generally used in an active state or after inactivation at 62° C., and in various doses, ranging from 0.05 to 0.4 c.c.—usually 0.1 c.c. Blood was collected from each dog from the external jugular vein by means of sterile needles in sterile test tubes, and in those tests in which active serum was used the reactions were conducted within twenty-four hours after the collection.

CONCLUSIONS. The results of this study are summarized in several subdivisions throughout the paper; here it may be stated that according to the results of complement-fixation tests with the sera of infested dogs we have reason to believe that production of antibodies may occur after infestation of the intestines with the common parasites.

Production of antibodies was especially in evidence in infestations with tapeworms; to a less degree with the ascarides or round-worms, and to a slight extent with the whip-worm.

These complement-fixations have tended to show a biological relation between the tape-worms *Tenia serrata* and *Dipylidium caninum* and between *Ascaris canis* and *Strongylus gigas*, although on account of the wide morphological differences we leave it an open question; it is probable, therefore, that complement-fixation tests will not differentiate with the usual technic between related species of parasites, although they may show the presence of a parasite.

Complement-fixation tests may be of value in the diagnosis of intestinal parasitism of man, and we are now making investigations in this field.

May 13, 1915.

**Experimental Studies of Various Antiseptic Substances for Use in
the Treatment of Wounds Based on the Work of
Sir W. Watson Cheyne.**

ROBERT A. KEILTY, M.D., AND JESSE E. PACKER, M.D.

(From McManes Laboratory of Pathology, University of Pennsylvania.)

The purpose of the paper was the experimental study of the antiseptic power and diffusibility of various substances commonly used to check bacterial growth. The study was based upon and largely followed the report of Sir. W. Watson Cheyne, in the *Lancet*, February 27, 1915.

The organisms used in our work were the *Staphylococcus aureus*, *Streptococcus pyogenes* and *Bacillus coli*. It was found that substances inhibiting *B. coli* acted upon streptococcus to the same degree and upon staphylococcus to a greater degree so in most of this work *B. coli* has been used.

From a comparison a convenient classification of the results may be given under three groups: (1) those drugs which are markedly active; (2) those drugs which are slightly active; (3) those drugs which are inactive.

(1) Those drugs which are markedly active: under this we may include the following: tricresol, 10 to 20 per cent.; carbolic acid, 1 to 20 per cent.; thymol, 10 to 20 per cent.; creosote, 25 per cent.; mercuric iodide, 10 to 30 per cent.; tincture of iodine, 5 to 10 per cent. (2) Those drugs which are slightly active: salicylic acid, 20 to 30 per cent.; Japanese powder (salicylic and boric acids), 20 to 30 per cent.; zinc chloride, 20 per cent.; mercuric bichloride, 0.2 to 0.4 per cent. (in solution, 1 to 750 and 1 to 625); guaiacol ointment, 10 per cent.; mercuric ointment, 33 per cent.; creosote, 10 per cent.; carbol fuchsin (contains 5 per cent. carbolic acid). (3) Those drugs which are inactive: iodine, 2 to 6 per cent. (crude drug); menthol and camphor, each, 20 per cent.; boric acid, 30 per cent.; iodoform, 90 per cent.; zinc sulphate, 1 to 5 per cent.; alcohol absolute, alcohol methyl, alcohol ethyl, 95 per cent.; calcium chloride, 20 grams; formalin, 0.1 and 0.5 per cent. (in solution 1 to 1000, 1 to 500); lead nitrate, 5 to 10 per cent.; creosote, 10 per cent.; silver nitrate, 5 per cent. (in solution, gm. xx to f3 i); turpentine, 1 per cent.; ether, chloroform, Delafield's hematoxylin, Sudan III. Loeffler's methylene blue, eosin watery solution, iodine green, glycerin, bismuth betanaphthol, 20 per cent.; salol, 20 per cent.; hexamethyl-enamin, 20 per cent.; zinc oxide, 25 per cent.; scarlet red (2 per cent. Scharlach R), bismuth subnitrate, 50 per cent.; balsam of Peru, ointment, 25 per cent.; Scharlach R saturated solution.

CONCLUSIONS. 1. The method as outlined by Cheyne offers an excellent means for the study, experimentally, of the diffusibility and antiseptic power of drugs.

2. The results obtained are confirmatory in some cases and startling in others as to the value of well-known remedies.

3. The phenol group and thymol give the best results as far as our work goes.

4. We are able to recommend an ointment composed of a base, castor oil, 70 parts; white wax, 20 parts; spermaceti, 10 parts, with tricresol and thymol 10 per cent. each. Lanolin and wax may be used, but the vegetable base has some advantages.

5. These results are experimental and must be borne out by clinical application. This we hope to do and report upon in the near future.

6. The only drawback is the possibility of toxic effects, and this

may be overcome by cautious usage in the amount applied and the interval between dressings.

7. This paste has a wide range in civil life as well as in war, and should prove more effective than those of common usage because of the increased percentages of the drug.

8. At the same time the principle of the large dose is to establish at once or to maintain an asepsis in a wound until ideal conditions for surgical treatment are available.

May 13, 1915.

Meckel's Diverticulum—A Resumé—and Report of Four Cases of Acute Diverticulitis.

G. K. STRODE, M.D.

Meckel's diverticulum is the resultant of incomplete involution of the omphalomesenteric duct. The distal end of the diverticulum may be attached or not to the abdominal wall, the intestinal tract, or the mesentery. The diverticulum may open freely at the umbilicus, producing a fecal fistula or a mucous cyst. Tumors, either benign or malignant, may be derived from the part.

Meckel's diverticulum is more frequent in the male, and is found in about 1 out of 70 individuals. It usually rises from the lower ileum. Pathology developed with decided ease in all cases where the distal extremity of the diverticulum is fixed.

Intestinal obstruction is the most frequent affection of the part, and in 6 per cent. of all cases of intestinal obstruction located in the ileocecal region this diverticulum is the etiological factor. Diverticulitis is a rare affection. Hernia of Meckel's diverticulum may occur. Enterocysts and tumors about the umbilicus are also very rare. Four cases of acute diverticulitis are appended.

CASE I.—Male, aged thirty-two years. Preoperative diagnosis of acute appendicitis, with usual signs and symptoms. At operation normal appendix found and an acutely inflamed Meckel's diverticulum. Patient made a satisfactory recovery.

CASE II.—Female, aged twenty-seven years. Acute abdominal pain three years before. Irregular attacks since then. Indigestion and constipation. At operation a chronic interstitial appendix and subacute inflammation of Meckel's diverticulum was found. Perfect recovery.

CASE III.—Female, aged 32 years. Usual history of appendicitis, with two previous attacks. Found acute diverticulitis a point of rupture. Also found some chronic tubal trouble, but nothing else acute. Appendix removed, but not seat of trouble. Uneventful recovery.

CASE IV.—Female, aged thirty-nine years. Previous operation two months before for removal of fibroid of uterus. Two days before second operation had violent attack of abdominal pain, with vomiting, and preoperative diagnosis of acute intestinal obstruction was made. Found an acutely inflamed Meckel's diverticulum at operation and nothing else abnormal. Former operative site was clean. Recovered.

These cases conform to type in a general way. They were all about middle life or younger. Three were females and all recovered which is unusual considering statistics. In all four instances the diverticulum had its distal extremity fixed. In no case was a preoperative diagnosis made.

May 13, 1915.

Zoölogical Garden Laboratory; Outdoor Treatment of Tuberculosis in Monkeys.

CHAS. B. PENROSE, M.D.

The pathological conditions found here are not all due to the environment of captivity. Though we are unable to say what percentage of the disease that we find may have originated in the wild state, yet it is undoubtedly considerable. Animals are often brought here within a very short time after capture that present pathological conditions too well established to have developed in the short period of captivity. For instance, we have received a number of wild cats from South Carolina that have died here within a short time after capture, presenting a variety of parasites—intestinal, muscular, and pulmonary.

Again, many of the animals pick up diseases in transport before we receive them. They get these diseases at the depots where they are first collected, or in the insanitary surroundings of the hold of a vessel, or on a railroad train.

A good many of the deaths are perhaps more or less directly due to the diminished resistance of old age. The normal length of life of most animals in the wild state is unknown. It varies greatly among the different orders. The Camidæ are old at ten years, while the elephant may live to fifty. In most cases we are ignorant of the age of the animals received here, and without doubt, in many instances impaired resistance, due to old age, is already present.

Therefore we should not blame the conditions here or the environment of captivity for all of our deaths, though this environment is without doubt the most important factor in the mortality. The unavoidable change of food and of climate; lack of exercise, lack of the stimulus of hunting food, and of chasing and being chased; lack of seclusion; fear, ennui, loneliness, certainly render the captive

animal more vulnerable; and, of course, they are here exposed to all the sources of infection incident to civilization.

In the beginning of the work on tubercular monkeys we killed every individual that reacted unfavorably to the tuberculin test, and by so doing we sacrificed many valuable animals. For the past three years, however, we have preserved our tubercular monkeys and have given them the open-air treatment with most satisfactory results. They are placed outdoors, usually in separate cages, with a small wooden box for shelter. They are out day and night, in all weather, with no artificial heat. The temperature has often been zero Fahrenheit. We have treated in this way fourteen monkeys that the tuberculin test showed to be tubercular. Of the fourteen monkeys, twelve are living. Two, a Hainan Gibbon from the island of Hainan, and a Lion-tailed Macaque from the Malabar coast of India, have been out for three years. The two that died were Spider monkeys, delicate South American monkeys that could not stand the exposure, and had to be taken indoors, where they both died, showing tubercular lesions.

It is remarkable how well most monkeys stand extreme cold, even those from the tropics. Their coats become fine and thick, and they look much better than the indoor monkeys; and though their tails are occasionally frozen, with a resulting loss of from one to six inches, they are apparently happy, even in the coldest of our winter weather.

May 27, 1915.

**Report of an Enzoötic of Parasitic Proventricular Worms
(*Spiroptera incerta* Smith) of Parrots, with Control
of Same.**

FRED. D. WEIDMAN, M.D.

Details of earlier scientific investigations are to be found in the *Proceedings of the Academy of Natural Sciences of Philadelphia*, March, 1913, p. 131. There it was brought out that undeniable disease is produced by these worms, consisting essentially of serious catarrh of the proventricle, often with distention of the viscus producing displacement of heart, sometimes rupture of proventricle and consequent serositis, a disease affecting 118 parrots in ten years. In 1912 hygienic measures were instituted consisting in disinfection and renovation of the parrot house and segregation of infected birds. Such segregation accomplished by diagnosis effected through examination of droppings for parasitic ova by special method. This method was necessary on account of special features of avian droppings. Therapeutic measures were not of use and investigations of the life-cycle were not productive. In the three years elapsing since 1912 no new cases have developed

nor have any new arrivals been detected with the disease. Furthermore, out of 20 birds segregated in 1912 with the worms 4 survived, none of which now show intestinal ova. Explained on grounds of senility, the worms have passed through their span of life. The hygienic measures have stamped out the disease and reduced the parrot mortality at the garden by 33, or 50 per cent.

CONCLUSIONS. 1. There is an enzootic disease of parrots (*Psittacine spiropteriasis*) caused by a proventricular spiroptera (*S. incerta* Smith) which may cause serious mortality.

2. The geographical source and life history of the parasite is unknown.

3. The parasite may die out spontaneously when the bird is but lightly infested.

4. Therapeusis is inefficient.

5. The disease may be controlled by employing appropriate diagnostic and hygienic measures.

May 27, 1915.

**An Arachnoid (Pneumotuber Macaci Landois and Hoepke)
Parasitic in the Lungs of a Monkey, Macacus Rhesus.**

FRED. D. WEIDMAN, M.D.

The case is reported because (1) the lesions are tubercular, (2) they occur in an animal closely related to man, and (3) endoparasitism by arachnoids, human or subhuman, is extremely rare.

The monkey in question died of subacute enteritis. Each lung showed eight to ten subpleural tubercles, the smaller ones solid, the larger ones with soft, umbilicated centre, and containing gray necrotic débris. Under the microscope it contained arachnoids described in full by Landois and Hoepke.¹

Pathogenicity and portal of entry of the disease problematical. Pathogenicity probably confined to local irritation. The organisms may migrate as far as from one lung to the other. Probable entry by respiration, from straw used for bedding or from fruit. Other observers believe in entrance by alimentation, via thoracic duct to blood and thence to lung.

Notes given of recorded endoparasitism in lower animals and man follow:

In lower animals.

Cytodites nudus. Common in air sacs of fowls. Serious mortality.

Halarachni halichoeris. Once in nasal mucosa of gray seal.

Cytoleichus banksi. Once in lungs of California ground squirrel.

Pneumonyssus simicola. Lungs of monkeys. One case.

¹ Centralblatt f. Bakteriologie u. Parasit., 1914, 1 Abt., lxxiii, 384-395.

Pneumotuber macaci. Lungs of monkey. Two cases.

In man true undoubted parasitic cases.

Castellani found arachnoids in great omentum of case of sleeping sickness. Like Cytodites nudus.

Tsunoda found great numbers in stool of anemic individual, aged fifty-one years.

Von Trouessart found "Histiogaster spermaticus" in the purulent contents of a cyst of the testicle.

Questionable cases fairly numerous. Often in urine, the arachnoids found dead. Explained by introduction on greased catheter, grease being a nutritive medium for Tyrolyphidae. Arachnoids have also been found in cells of corks used as stoppers for urine containers. Reported in aural pus, cases of prurigo Hebræ in stools, and in tumors, on all of which ointments may have been used. Also reported in vomitus from case of gastric cancer and in dysenteric stool.

May 27, 1915.

Amyloidosis in a European Badger.

HERBERT FOX, M.D.

Interesting because there seems to be in the histological and anatomical findings no reason for chronic change. Amyloid changes are not frequent in wild animals, although chronic inflammations and suppurations which are supposed to cause it, are common.

May 27, 1915.

Coccidium Bigeminum Stiles in Swift Foxes (Habitat Western U. S.).

FRED. D. WEIDMAN, M.D.

The infection was detected in two swift foxes (*Canis velox*) during routine examination of feces for hook-worm ova. In a week the more heavily infested animal had died. The other, very lightly affected, recovered and is now on exhibition. Autopsy showed severe hemorrhagic and ulcerative enteritis, and mature coccidia in necrotic material at margins of the ulcer. Oocyst is form seen in feces. In this case it averaged $30 \times 40\mu$. This is different from Stiles's figures, $80 \times 14\mu$, while at the opposite extreme lie Railliet's, *i. e.*, for var. *cati* $8 \times 9\mu$, for var. *canis* $8 \times 13\mu$, for var. *putorii* $7 \times 10\mu$. It seems proper, therefore, to advance a new varietal name, *canivelocis*, for the form noted in this case.

While pathogenicity is not commonly ascribed to the organism it would be well to at least hold our minds open on this point. For

the mature parasites were found within ulcers and in enormous numbers in the fox which died. In the case of the fox which recovered the infection was minor.

If future cases of similar degree occur it will be a matter of economic importance not only to zoölogical gardens but to game wardens and those who breed foxes for the sake of their furs.

May 27, 1915.

Exhibition of *Cladorchis (Stichorchis) subtrique-trus (Rudolphi)*

FRED. D. WEIDMAN, M.D.

With the reconstruction a specimen of the worm *in toto* was shown, together with the serial microscopica sections of a second worm and the drawings from the same leading to the reconstruction itself. Identification of the worm is impossible without cutting sections, on account of its subcylindrical form, which precludes flattening of sufficient degree for microscopic study *in toto*. The worm apparently produces no pathological disturbance. Reconstruction made to illustrate general plan of anatomy of flukes for student instruction purposes, for museum exhibition, and as confirmation to previous morphological descriptions of the parasite.

May 27, 1915.

Pearl Disease in Monkeys with Isolation of Bovine Organism.

HERBERT FOX, M.D.

Exhibition of pearl disease in a black-handed spider monkey whose mate also died with this condition. Typical dry unpigmented bovine culture was isolated. All cases of bovine infection in this garden are in spider monkeys. This has no particular significance. The vast majority of tuberculous monkeys according to the statistics of the Philadelphia, London, and Berlin gardens indicate that they are chiefly of the human type and assume the picture commonly known as "affentuberculose."

May 27, 1915.

Distribution of Uncinaria among the Lower Animals.

FRED. D. WEIDMAN, M.D.

Three species have been described in man, *Ancylostoma duodenale* (Dubini), *Uncinaria americana* stiles, and *Ancylostomum*

cedanicum vel *braziliense*. The latter has been found in three human beings in India. It is constant in Bengalese domestic cats and dogs, and has also been found in a civet cat. Also common in cats and found in one dog in Brazil.

Many species among the lower animals. Reducing the list to undoubted valid species (there are many synonyms, as is usual in helminthology) twelve remain.

<i>Uncinaria canina.</i>	Dogs, cats, wolves, foxes, wild cats, cheetahs.
<i>Uncinaria stenocephala.</i>	Dogs.
<i>Uncinaria radiata.</i>	Calf.
<i>Uncinaria cernua.</i>	Sheep and goats.
<i>Uncinaria trogocephalus.</i> ¹	Sheep.
<i>Uncinaria ursi.</i>	Polar bear.
<i>Uncinaria crassus.</i>	Genet.
<i>Uncinaria Boe.</i>	Boa constrictor.
<i>Uncinaria lucasi.</i>	Fur seals, hair seal.
<i>Uncinaria ceylanicum.</i>	Man, dogs, cats, civet cat, African lion.
<i>Uncinaria os papillatum.</i>	Elephants.
<i>Uncinaria criniformis.</i>	European badger.

Examination of 150 round-worms found at autopsy in the Philadelphia Zoological Garden showed 14 cases of *uncinaria* infestation. Four were in wild cats from South Carolina, 3 from spotted wild cats of Texas and New Mexico, 4 in foxes (red, gray, Arctic, swift), and 1 each in wolves, sea lions, and jaguarundi. Infestation very light (less than a dozen worms) in most cases. Exceptions, young sea lion, 98; gray fox, 67; spotted wild cats, 21 and 24.

The form found in the young sea lion corresponds to *Uncinaria lucasi* described by Stiles in fur seals. The only forms found in the canidæ and felidæ were *Uncinaria canina*, a point of economic interest since the wild cats came from hookworm districts.

Infestation of dual hosts is possible, Leiper reporting 2 cases of *Ancylostoma duodenale* in dogs and Lane 3 cases of *Uncinaria ceylanicum* (ordinarily a parasite of cats and dogs) in human beings.

May 27, 1915.

Pancreatitis in Wild Animals.

HERBERT FOX, M.D.

The anatomy of the pancreas is suited to the physiology of various orders of the zoölogical scale. There are great variations in arrangement of the pancreatic and biliary ducts, especially among

¹ Cited by Dock and Bass.

the Aves. In this class it would seem that pancreatitis of enteric origin is due to a deep infiltrative enteritis and periductal spread to the pancreas. The lesions in the pancreas of mammals are essentially the same as those of human beings. Inflammatory obstruction of the pancreatic duct always leads to hemorrhagic or digestive pancreatitis, but these obstructive lesions are always superficial as mucocatarrhal inflammation. Chronic pancreatitis seems to be due to deep infiltrative enteritic lesions and infiltrative and proliferative processes in and around the wall of the pancreatic duct. These are surely the changes in the absence of mechanical obstruction. Acute hemorrhagic and digestive pancreatitis is more common in the animals in which there is close association of the biliary and pancreatic ducts, therefore a greater chance for activation of the pancreatic ferments by bile. Pancreatic and hepatic cirrhosis are very infrequently associated in wild animals.

May 27, 1915.

Mycotic Esophagitis (Thrush) in Mississippi Kites.

HERBERT FOX, M.D.

Specimens from a small limited virulent epizoötic thrush. Lesions in the pharynx and esophagus.

May 27, 1915.

Intussusception in Esquimo Dog.

HERBERT FOX, M.D.

Intestinal obstruction not as common among wild animals as the inflammatory lesions would seem to warrant. Peritoneal adhesions indicating old obstruction or peritonitis are rare. Acute inflammations of the peritoneum seem to be always fatal.

May 27, 1915.

Remarks on the Results of Examination in a Series of Brains from the Zoölogical Gardens.

WILLIAMS B. CADWALADER, M.D.

Diseases of the nervous system seem to be very uncommon among animals in the Zoölogical Gardens. After having examined the spinal cord and brain of thirty-nine animals, I have arrived at certain general conclusions which may be of interest: Seventeen of these

cases had not shown signs or symptoms before death indicative of cerebral disease, and in each instance, as might be expected, microscopic examination of the nervous system proved negative. The remaining 22 cases, however, did exhibit symptoms of central nervous disease, yet these signs were, as a rule, very difficult to determine with precision.

Convulsions or fits were frequently observed, generally resembling closely the bilateral tonic and clonic convulsion seen in man with more or less disturbance of consciousness. Perhaps, more often consciousness was partially preserved. Unilateral fits or typical Jacksonian convulsions have not been known to occur.

The cause of death in 4 of these cases was nephritis; in 3, enteritis, and chronic leptomeningitis in 3. It is possible had the finer histological methods, such as silver stains of Cayjal and Bielchowsky, been used slight cellular alterations could have been demonstrated, which are known to occur occasionally in certain toxemias.

Dr. Penrose has already told you that tuberculosis is not prevalent and indeed tuberculosis of the nervous system is exceedingly uncommon. Dr. Rhein, a few years ago, reported an instance of a tuberculous abscess occurring in the left cerebral hemisphere of a hymadrias baboon, and there is a brain of a common macaque on the shelves of the laboratory which shows a tuberculoma situated close to the Rolandic region of one side. Curiously enough, this monkey was not paralyzed for voluntary movements.

The brain of a chimpanzee which died in January, 1911, of miliary tuberculosis appears to be entirely healthy. It is interesting, in view of the great advances of recent years made in our knowledge of poliomyelitis, to note that there have been 3 cases resembling this disease in the Garden—1 in a Canada lynx, 1 in a black and white lemur, and 1 in a raccoon. In each of these animals paraplegia of rapid onset had existed. Perhaps the most important observation from the point of view of neuropathology is the extreme rarity in animals of arteriosclerosis of the nervous system. Typical arteriosclerosis of the brain has never been observed in this laboratory, and in a somewhat casual observation of the literature I have not been able to find a single case recorded. There are two factors which would seem to explain this fact: (1) the non-existence of syphilis, and (2) the infrequency of senility. The absence of syphilis in animals would seem to explain why the so-called system diseases of the spinal cord do not occur, and, on the other hand, it would seem to strengthen the general belief that syphilis is the most important etiological factor when they do occur in man.

The conditions under which animals live in captivity do not tend to longevity. On the other hand, arteriosclerosis, as we know it in man, probably requires many years to develop. Animals which are naturally short-lived might scarcely live long enough to produce arterial changes in spite of the fact that the underlying

morbid process might be developing. Yet there are, of course, animals and birds which do live to be long-lived, but even in these the senile changes of the brain as we know them in man are rare.

Whatever explanation you care to accept it is certainly true that cerebral arteriosclerosis and its usual results—apoplexy, cerebral hemorrhage, and cerebral softening—do not occur in wild animals.

In conclusion, I would call attention to the fact that there is very little information at our disposal regarding the subject of neuropathology in animals. Little or nothing is to be found in foreign or American literature on this subject, so that comparisons are impossible.

May 27, 1915.

Follicular Enteritis Simulating Typhoid Fever in Monkeys.

HERBERT FOX, M.D.

Medullary swelling of Peyer's patches similar to typical fever lesions. Not due to typhoid infection.

May 27, 1915.

Remarks on a Case of Amblyopia in a Young Monkey.

W. B. CADWALADER, M.D., AND H. M. LANGDON, M.D.

May 27, 1915.

A Note on the Lesions in the Female Genital Tract in Wild Animals.

E. A. SCHUMANN, M.D.

May 27, 1915.

Leprosus Bacilli in Nasal Secretion and in the Skin of a Macular Leproide.

JAY F. SCHAMBERG, M.D., AND JOHN A. KOLMER, M.D.

(From the Laboratories of the Philadelphia Polyclinic and College for Graduates in Medicine.)

Sections of the skin of smears of the nasal secretion from a case of macular leprosy were shown; large numbers of acid-fast bacilli and leprosy cells were demonstrated.

June 10, 1915.

Cystosarcoma of the Breast.

W. WAYNE BABCOCK, M.D., AND M. G. WOHL, M.D.

Cystosarcoma, to which group our specimen belongs, results from a sarcomatous proliferation of the interstitial connective tissue and a concomitant dilatation of the milk ducts.

The tumor was removed from the right breast of Mrs. M. H., aged seventy-two years. The patient claims to have noticed a lump in her breast ten years previous to the operation, which, however, caused no pain. Six years later the tumor began to enlarge and became painful.

The size of the tumor was that of an orange, its consistency rather soft, the cut surface presented cysts of various sizes which were filled with a thick milky substance, some of them were filled with blood.

Microscopical examination showed the characteristic picture of a mixed-cell sarcoma undergoing myxomatous degeneration.

June 10, 1915.

Fibroma of the Ovary.

W. KRUSEN, M.D., M. G. WOHL, M.D., AND H. DUNCAN, M.D.

The scarcity of these tumors can be readily appreciated from Maipe's review of the literature covering the period from 1840 to 1909, who found only 72 tumors of unquestionable histological nature. Since then 4 more cases have been reported.

The weight of the tumor was three pounds, it was spherical in shape; had a definite capsule; it was of firm consistency; the central part, however, showed some softening. The microscopical examination of both ovaries confirmed the macroscopical findings.

June 10, 1915.

Experimental Mercurial Nephritis.¹

JOHN A. KOLMER, M.D.

(From the Dermatological Research Laboratories of the Philadelphia Polyclinic.)

A large proportion of the experimental animals succumbing to mercurial intoxication were autopsied and histological examinations

¹ Published in full in the Journal of Cutaneous Diseases, December, 1915.

made of the various organs, particularly the kidneys. In this manner we were able to study the changes produced in the kidneys after the administration of various salts by intravenous and intra-muscular injection and at intervals varying from twenty-four hours to as much as six weeks after injection.

The nephritis produced by mercury is primarily a tubular form of nephritis. In mild intoxications the histological changes may be confined almost entirely to the convoluted tubules. In practically all but these mild intoxications, however, some changes are to be found in the glomerules, characterized mainly by a serous or hemorrhagic exudate into the capsular spaces. Only exceptionally were examples of true intracapillary glomerulo-nephritis encountered and well-marked capsular changes were found only occasionally and in the subacute and chronic intoxications. The vascular changes were never extreme and usually consisted in congestion of the veins in the midzonal and cortical portions. In general, therefore, it may be stated that in mild degrees of mercurial poisoning the resulting nephritis is essentially a tubular nephritis; in all severer intoxications (and these include all that are fatal within a week or ten days after administration of the salt) the nephritis is a combination of severe tubular and hemorrhagic glomerular nephritis.

June 10, 1915.

Experimental Studies on the Mechanism of Chronic Intestinal Stasis.

ROBERT A. KEILTY, M.D., AND MR. E. V. MASTIN.

June 10, 1915.

Influenza-like Organisms in Meningitis.

C. C. WOLFERTH, M.D.

June 10, 1915.

Preliminary Note on a Paradoxical Hemolytic Reaction with the Erythrocytes of the Dog.

FRED. BOERNER, V.M.D.

(From the Laboratory of the Pennsylvania State Livestock Sanitary Board.)

(ABSTRACT.)

During the study of natural hemolysins in normal horse serum, it was discovered that inactivated guinea-pig and horse serum was

capable of dissolving the red cells of the dog without the aid of a complement.

Treating the serum with cells and centrifuging failed to remove the hemolytic substances. Heating serum to 98° C. for a half hour or to 56° C. for two or three hours failed to inactivate it.

The sera of several species, including guinea-pig, horse, rabbit, cow, and man have been examined and thus far all have been found capable of dissolving dog corpuscles to some extent.

The technic employed was as follows: After placing the desired amount of inactivated serum to be tested in a test tube, 1 c.c. of a 2.5 per cent. solution of blood and 2 c.c. of salt solution was then added. After shaking, the tubes were placed in an incubator at 37° C. for two hours, removed and allowed to stand in the ice-chest overnight and read the following morning.

Horse serum has given less pronounced results than the others, while rabbit and man have been the most potent. When using certain sera in large amounts, the rapidity and degree of hemolysins does not proportionately increase. This may be attributed in part to the fact that agglutination of these cells takes place with the larger amounts of serum and thus protects them.

It has been constantly observed that sera in which hemolysis has occurred are the most active, probably due to the elimination of a substance from the cells which plays an active part in this phenomena.

A comparison of this hemolytic reaction with the process of venom hemolysis, the two appear to be very similar and further work will probably prove the two to be closely related if not identical.

June 10, 1915.

A Study of the Occurrence of Diphtheria Bacilli in Normal Throats.

ROBERT A. KEILTY, M.D.

(From McManes Laboratory of Pathology, University of Pennsylvania.)

(ABSTRACT).

The purpose of this paper is the determination of the number of virulent diphtheria bacilli in normal adult throats.

The results: 97 cases were examined over a period of two years, 50 in one class and 47 in another. Of these 21 cases had suspicious rods. By this I mean any rod which morphologically resembled Loeffler bacillus. In no case were they perfectly typical and in no case did they occur in more than a few colonies. Of these 4 cases were replated and recultured. But 1 of these was considered

likely, and this was injected into a 750-gram guinea-pig. A slight local reaction resulted and the pig was alive at the end of five days. This was considered a negative result and the type a pseudodiphtheria bacillus.

CONCLUSIONS. 1. The percentage of occurrence of Klebs-Loeffler bacilli in healthy normal throats under hygienic conditions is low or nil.

2. A positive culture with suspicious membrane in this class of cases should have a great deal of weight.

3. Granting this positive evidence of value I am still inclined to believe that cultures play altogether too large a part in the routine handling of diphtheria.

I am indebted to Mr. J. A. Magoun and Mr. Charles E. Behney for assistance in the technical work.

June 10, 1915.

A Study of the Cultivation of the Tubercle Bacillus Directly from the Sputum by the Method of Peteroff.

ROBERT A. KEILTY, M.D.

(From McManes Laboratory of Pathology, University of Pennsylvania.)

(ABSTRACT.)

The purpose of this paper is to confirm the work of Petroff¹ in a recent paper on the cultivation of the tubercle bacillus and possibly to add a little from my own experience with the method.

Briefly as outlined by Petroff the sputum is mixed with a 3 per cent. sodium hydrate solution and incubated for a period of thirty minutes at 37° C. This is neutralized to sterile litmus paper with normal hydrochloric acid, centrifugalized, and the sediment inoculated on a veal-egg medium to which gentian violet in the dilution of 1 to 10,000 has been added. The purpose of the sodium hydrate is to macerate the sputum and kill most of the organisms, while the gentian violet inhibits those not eliminated by the hydrate at the same time apparently beneficial to the tubercle bacillus.

CONCLUSIONS. 1. It is possible to isolate the tubercle bacillus using scrupulous technic from contaminated material such as the sputum by the method outlined by Petroff probably in the majority of cases.

2. It is necessary to use several tubes.

¹ New and Rapid Method for the Isolation and Cultivation of Tubercle Bacilli Directly from the Sputum and Feces, Journal of Experimental Medicine, 1915, vol. xxi, No. 1.

3. The question of neutralization, drying, temperature of incubator and contamination after the growth has started are important.
4. The colonies start as pin points becoming larger and confluent, but still preserving individual groups of a dry appearance simulating the medium closely in color.
5. The bacillus of tuberculosis in young clutures is tinctorily acid fast and of polymorphous morphology.

Hyperplastic Pyloric Stenosis of the Stomach in an Infant.

NATHANIEL GINSBURG, M.D.

Dr. Ginsburg exhibited a stomach showing hyperplastic pyloric stenosis and a heart from the same patient which presented a patent foramen ovale. The history of this case was as follows: A first child; instrumental delivery. At birth the baby weighed eight pounds. Three weeks before admission to the hospital, after satisfactory nursing at the breast, it began to vomit, the vomitus being projectile in type. In spite of rectal feeding and modification of breast feeding the child continued to vomit and was admitted into my service at the Jewish Hospital, being five weeks of age at the time of its admission. The baby weighed five and one-fourth pounds, and there was a palpable tumor in the region of the pylorus with epigastric peristalsis. Dr. Laura Weber, of Germantown, treated the child, and with a diagnosis of pyloric stenosis sent it to the hospital. Since the baby was steadily growing worse and food retention by the stomach seemed impossible, surgical intervention was determined upon.

At operation through a median incision in the epigastrium, it was impossible to deliver the stomach owing to the firm immobilized pyloric end of the stomach, which was greatly thickened. The pylorus was spindle-shaped, as exhibited by the specimen, and very thick, indicating enormous hypertrophy of its musculature.

A posterior no-loop gastrojejunostomy was performed. Five days later, owing to the unsatisfactory state of the patient, the abdomen was reopened, the posterior anastomosis closed, and an anterior gastro-enterostomy, making a big orifice, performed.

The baby ceased vomiting, except for an occasional eructation, and gained fifteen ounces in the succeeding nine days. Food digestion took place, as evidenced by normal, yellow bowel movements, and absence of vomiting. On the ninth day, when the baby apparently was doing well and recovery seemed certain, it developed temperature and died.

At autopsy a condition of the stomach showed an enormously thickened pylorus and a functioning gastrojejunal orifice.

The surgery of pyloric stenosis includes a review of the surgery

of pyloric obstruction from various causes in the adult. It would seem, from a hasty review of this subject, that pyloric resection with closure of the stomach and duodenum and gastrojejunostomy, pyloroplasty of the Finney type, and pyloroplasty of the Mikulitz-Heineke type, as well as incision down to the mucosa without suture, are all difficult, and at times, impossible procedures upon the infant. Dr. Ginsburg believes, from the work of Scudder in Boston and others as well as from his own limited experience, that in hypertrophic pyloric stenosis with almost complete occlusion of the pyloric passage that the operation of choice is posterior gastrojejunostomy.

This stomach removed from a baby that died following two operations upon the stomach for hypertrophic pyloric stenosis shows a marked pyloric thickening with a lumen which will admit only a broom splint. It is obvious in this case that the pyloric obstruction was of a mechanical type and therefore not spasmotic in nature. The degree of edema existing during life can be stated with some certainty not to have been marked, since I had two opportunities to carefully palpate the stomach *in situ* in the living child, and the sense of touch revealed on both occasions a cartilaginous resistance due to the thickened muscular fibers. On this specimen no operation save resection of the pylorus would have availed except the posterior gastro-enterostomy opening which was made.

October 28, 1915.

Signs of Increasing Mortality in the United States from Diseases of the Heart, Bloodvessels, and Kidneys.¹

EUGENE LYMAN FISK, M.D.

(Samuel D. Gross Lecture.)

In all civilized countries the death-rate before middle life has been lowered by the control of tuberculosis and the acute communicable diseases. In England, Wales, Denmark, Prussia, and especially Sweden the death-rate has improved at all age periods, but in the United States there has been during the past thirty years a rising mortality after middle life, due to a heavily increased death-rate from chronic disease of the heart, bloodvessels, and kidneys. This trend is shown by life insurance experience, by vital statistics derived from the United States census, the Registration Area, the Registration States, and individual cities and States.

The examination of large groups of supposedly healthy people by the life extension institute shows that the early signs of circulatory and renal impairment are quite common in early life, and

¹ Complete paper to be published in New York Medical Journal.

confirm the evidence derived from vital statistics as to a widespread condition of premature impairment or decay, which should be vigorously combated by means of signs of increasing mortality.

1. Eugenics to improve the quality of the race.
 2. Periodic physical examination for the purpose of detecting physical impairment, especially foci of infection, and also error in living habits or faults in heredity which suggest important modifications of occupation of living habits. (Careful thorough technic in palpating arteries of young subjects is important. High blood pressure was present in only 17 per cent. of the cases of arterial thickening.)
 3. Education in and application of the law of personal hygiene. (The essayist submitted figures contrasting results found on examination of 1000 industrial workers at the Ford Motor Company and 1000 bank clerks in New York City.)
- October 14, 1915.

Pseudomucinous Cyst of the Appendix.

NATHANIEL GINSBURG, M.D.

This specimen was removed during the course of an operation for ruptured ectopic gestation involving the right tube.

The subject was thirty-seven years of age; entered the hospital complaining of pain in the lower abdomen, and upon examination presented a tumor filling the right aspect of the pelvis. Exploration revealed a ruptured tubal pregnancy with an encapsulation of the mass indicating that a period of time of many days had elapsed between the rupture and the operation. Upon investigation of the appendix, the organ was found to have been converted into a cystic state. The appendix is a sausage-shaped mass; the mesenteric border is concave, and at the time of its removal presented a thin peritoneal veil containing the appendicular vessels which were of a very small size. The vascularity both of the appendix and its mesentery was considerably less than that of the normal or acutely diseased organ. The wall of the appendix appears to be thinned out, formed by the seromuscular coat, and apparently there is no mucosa remaining, and very little if any of the muscular coat itself. The serous surface is fairly smooth and presents three distinct diverticula in two or more places near the proximal end of the organ. One of these diverticula is very large, of a circumscribed appearance, and contiguous to the mesenteric border of the organ a short distance from its proximal end. The wall of the appendix appears to be thinnest where the diverticula exist, no doubt due to less resistance in the mural structure at these sites. The thickness of the wall of the appendix is not uniform, a ten-

dency toward plaque formations being present. The appendix contains a thick semitransparent gelatinous material which is retained by an apparent closure of the proximal end of the organ, and this pathological state is conceded to result from either mechanical closure at the proximal side of the appendix close to the cecum as a result either of involution of the organ beginning at this point, or by constriction from an extraneous band or some other cause. Reproduction of this condition in the dog has failed, owing to the fact that it is believed that the process is slow in its onset, occupying a long period of time for its complete development.

October 28, 1915.

Bone Cyst of the Radius in a Child Accompanied by Pathological Fractures. Osteitis Fibrosa Cystica.

NATHANIEL GINSBURG, M.D.

These *x*-ray plates reproduce the bone cyst in the radius of the child about six years of age. He applied for treatment at the Mt. Sinai hospital for an injury of the right radius in the neighborhood of the wrist-joint. Careful examination on his first visit did not definitely indicate a fracture of the bone. A radiographic examination made at this time showed the bone cyst in the radius extending from within 2 cm. of the epiphyseal line at the wrist up the shaft for about 6 cm. The upper portion of the cyst practically involved the entire transverse diameter of the shaft. He returned a day or two later presenting in the second *x*-ray plate a pathological fracture at the seat of the bone cyst. The fracture line was transverse and the displacement was slight. The line of fracture took place through the shaft, corresponding to the greatest diameter of the cyst where the bone was weakest in its cortical structure. The hand and forearm were treated on a splint, and good function took place. A radiographic examination of other bones in this child did not reveal the presence of cystic disease elsewhere. Nature responded in this case to the best means of obliterating the bone cyst, by creating a pathological fracture, and thereby restoring the architecture of the bone by the callous formation attending union of the fragments.

October 28, 1915.

Salivary Calculus in the Duct of a Submaxillary Gland.

NATHANIEL GINSBURG, M.D.

This specimen is the left submaxillary gland, which was removed early in September, 1914, from a male patient, aged thirty-one

years. For two years previous to this operation he noticed a left submaxillary swelling following the ingestion of certain foods, notably what he terms "acid foods." The duration of the swelling was from fifteen to twenty minutes and accompanied by pain, the pain, however, not persisting after the subsidence of the swelling. For about a week previous to the operation he presented an enlargement of increasing size, accompanied by considerable pain and some left sublingual pressure. The pain began immediately after food was taken into the mouth, and radiated from the submaxillary area to the left temporomaxillary region following the course of a lingual nerve. The gland was enucleated close to the submaxillary duct at its proximal origin. The calculus was found to be of some size and almost completely obstructing Wharton's duct at its beginning. Calculus in a salivary gland is not of rare occurrence. The submaxillary seem to possess calculi five times more frequently than either the sublingual or the parotid gland. The removal of the gland promptly relieved the symptoms caused. by obstruction of the duct.

October 28, 1915.

Pontocerebellar Tumor.

ALFRED GORDON, M.D.

Male, aged thirty-five years; began to complain of headache about ten months before death. The pain would occur only occasionally, especially when he drank. He used alcohol quite freely. He also vomited occasionally, especially in the morning before breakfast. As the man was alcoholic, his physician attributed the occasional vomiting and headache to the abuse of drink. The condition remained unaltered during a period of six months. When he came under my observation, he presented very few symptoms, viz., dizziness upon sitting up, and slight sway in walking. Soon he developed a very slight deviation of the left lower face toward the right. He could not hear as well with the left ear as with the right one. The left knee-jerk was slightly more prominent than the right. The sensation to pinprick on the left side of face was somewhat duller than on the right. These few signs together with the occasional headache and vertigo, suggested to me the possibility of cerebellar pressure on the left. An eye examination revealed a very moderate swelling of the disks (Dr. Appleman). In view of this additional data I suggested an immediate subtentorial decompression, which was executed by Dr. N. Ginsburg. Shortly after the operation all the above symptoms became accentuated, and in two weeks the patient expired. A Wassermann test made on the serum was negative.

Autopsy revealed a tumor of the size of an English walnut in the left cerebello.

Pontine angle strongly adherent to the eighth nerve. The latter is thickened. The mass presses posteriorly on the cerebellar lobe. The portion of the medulla posteriorly to the pons is deviated to the right. The mass is hard. Histologically it is a round-cell sarcoma.

October 28, 1915.

The "Sugar" Content of the Spinal Fluid.

A. H. HOPKINS, M.D.

This paper deals with the study, by a modification of Bang's micromethod, of the sugar content of the spinal fluid in 150 cases. Summary and conclusions are as follows:

The consensus of opinion, based on recent literature, is that glucose is the principal reducing substance in the spinal fluid.

Its concentration in health is slightly lower than that of the blood sugar as shown by these studies in which Bang's method was used for both.

In meningitis there is the greatest disturbance in this relationship, there being a pronounced hyperglycemia associated with just as pronounced a drop in the sugar content of the fluid, this drop being due evidently to the destructive activity of the invading microorganisms.

In diabetes the sugar content of the spinal fluid is almost as high as that of the blood. In infectious pneumonia there may be a hyperglycemia without apparent change in the spinal fluid. The reducing substance of the fluid is frequently increased in uremia, a condition, however, in which hyperglycemia also occurs.

A slight increase in the sugar concentration of both the blood and spinal fluid occurs in some cases of epilepsy, as it does in certain other nervous conditions; but the variety of cases observed in this series of thirty, and consequently the limited number of any one disease, renders inadequate any conclusion drawn at this time.

Syphilis frequently reveals lower figures than any other condition with the exception of meningitis.

The micromethod for estimating the reducing substance of the spinal fluid has proved to be of value owing to its simplicity, reliability, and the very small amount of fluid required.

For relative value Fehling's test is unreliable and misleading unless the proper dilutions are constantly used, together with equal parts of the fluid and the solution. In the latter case fairly constant relative results are derived when there is a marked change in the amount of glucose and when there is not an excess of protein.

Quantitative estimations of the glucose concentration of the spinal fluid are of distinct value from the standpoint of very early diagnosis and prognosis especially in meningitis.

It remains for further investigations to reveal the value of this test in nervous disorders and syphilis. *October 28, 1915.*

Endothelial Phagocytosis in Pleural Exudate due to *Bacillus Typhosus*.

O. H. PERRY PEPPER, M.D.

A report was made of the diagnosis of typhoid pleurisy from the finding of a large number of endothelial cells in the pleural exudate. Many of the cells were phagocytic and had engulfed one or more erythrocytes. These cells closely resembled the endothelial phagocytes described by Mallory in the Peyer's patches, spleen and other organs in typhoid fever. The pleuritic symptoms in this patient promptly disappeared and the typhoid fever ran a typical course. The *Bacillus typhosus* was obtained in pure culture both from the blood and from the pleural fluid. Agglutination reactions were positive also. No evidence of tuberculosis of the lung could be obtained.

October 28, 1915.

An Extraordinary Polymorphonuclear Leukopenia in Typhoid Fever.

J. H. AUSTIN, M.D., AND S. S. LEOPOLD, M.D.

A case of typhoid fever with positive Widal and recovery of the *Bacillus typhosus* from the urine showed upon the day of admission to the hospital ward, the seventeenth day of the disease, a leukocyte count of 7600, of which 98 per cent., or 7448 cells were lymphocytes and only 0.5 per cent., or 38 cells, were polymorphonuclear leukocytes. One week later the count had returned approximately to normal, although some lymphocytosis still persisted. At this time an Arneth count showed an extreme predominance of young forms among the polymorphonuclear neutrophiles, indicating that the previous extreme diminution of the latter was due to their destruction and not to their mere withdrawal from the circulation.

In the literature of typhoid fever no instance of an equal degree of polymorphonuclear leukopenia has been found. A comparable leukopenia has, however, been reported in 3 cases other than

typhoid, 1 of tuberculosis of the mediastinal lymph nodes and 2 of staphylococcal septicemia.

The authors consider this case an extreme exaggeration of the blood change characteristic of typhoid fever, namely, a diminution of the polymorphonuclear neutrophiles to a minimum at about the time of defervescence, a gradual increase in the lymphocytes persisting somewhat longer than does the diminution in the polymorphonuclears, and an absence of eosinophiles during the febrile period. In this case it is the first of these three changes that exhibited the most pronounced exaggeration. *October 28, 1915.*

Very Early Tuberculosis of the Kidney.

B. A. THOMAS, M.D.

November 11, 1915.

Acute Suppurative Hematogenous Nephritis Apparently due to Pyorrhea Alveolaris.

B. A. THOMAS, M.D.

November 11, 1915.

Polycystic Kidney Complicating Toxic Goitre.

B. A. THOMAS, M.D.

November 11, 1915.

Acute Hematogenous Suppurative Pylonephritis.

D. W. FARLEY, M.D., AND O. H. P. PEPPER, M.D.

A. Q., female, aged thirty-seven years. Well until three weeks before admission, when an intense diarrhea developed with twenty or more movements per day. Diarrhea persisted until just previous to admission. Intense stomatitis and tenderness over the kidneys developed four days before admission. Had some fever. No urinary symptoms. Physical examination showed only an intense stomatitis and diffuse bronchitis. Blood-pressure normal and no edema. Eye-grounds normal. Temperature elevated. White blood cells from 13,800 to 22,200. Urine showed variable amounts of pus but no casts. Urine output normal. Phthalein elimination (four tests) only a faint trace. Blood nitrogen: 187

mgms. per 100 c.c.; later, 227 mgms. per 100 c.c. Studies of blood and urinary chlorides showed no retention of chlorides. Blood culture sterile. Wassermann negative. Pus in urine from each ureter. Culture gave pure growth *Bacillus mucosus capsulatus* from each ureter. X-ray examination showed both kidneys enlarged. No calculi.

The nature of the stomatitis could never be determined, as a very mixed flora was present. The stomatitis improved somewhat and the temperature fell below normal. The patient, however, steadily became weaker, the blood nitrogen rose until the urea nitrogen reached 207 mgms. per 100 c.c. of blood, the phthalein elimination remained almost zero and the patient died two weeks after admission. At no time was the blood-pressure above normal, the urine output reduced, or any edema present.

The autopsy was limited to the removal of the kidneys here exhibited.

November 11, 1915.

**Report on the Use of Fluids for the Preservation of Tissues
in the Sunlight.**

ADDINELL HEWSON, M.D.

(From the Laboratories of the Philadelphia Polyclinic.)

Since the time of the purchase of the formula of the Wickersheim fluid by the United States Government and the improvements necessarily following this purchase by various pathologists, in the mounting of gross specimens for pathological study, it has been the effort of all to obtain some fluid which will maintain the normal colors of the tissues of the body in as stable a condition as possible. The fluid herewith reported is not the result of haphazard work, but the accumulation and experience of thirty years in the effort to obtain what is herewith submitted.

When the fluid is injected into a body in the gross the color of the face becomes very lifelike; the tissues are soft and pliable, yet retain a certain amount of fixidity. If the body is placed in the same solution with which it is injected, the epiderm may come off. This can readily be prevented by increasing the amount of formaldehyde up to 3 per cent. The fat retains its color absolutely, the yellowness throughout being very apparent; the fibrous tissue, white and glistening as in life. The muscles on first opening the cadaver are very bright red; this fades somewhat, to a dark red. The nerve tissue retains its shape, color, and consistency provided the body is injected early enough after death.

If the specimen is put into the solution it will be found that the solution becomes very red and the blood from the specimen becomes very bright. The specimen should remain in the sun in the solu-

tion and the fluid be changed every two weeks until there is no discoloration of the solution in which it is lodged. It can then be permanently placed in its receptacle without change. It will be shown that the specimen changes but very little while in the solution, except to lighten the color. The firmness of the tissues is very apparent, demonstrating the facts in the specimens exhibited.

The principal point against the use of this fluid at the present time, is its great cost, owing to the expense of the glycerin, thymol, nitrate of potash, etc., which it contains. This expense has caused me to experiment with another fluid, the results of which are practically the same as those of the fluid above alluded to, with the expensive elements in part removed.

The solution is made by dissolving the boracic acid and nitrate of potash in sufficient water to make a solution; the remaining quantity of water is used to dissolve the rock salt and arsenous acid. The thymol and salicylic acid are dissolved in the alcohol; the carbolic acid can then be added and finally the formaldehyde. The boracic acid solution and the arsenous acid solution are mixed and then the alcoholic solution added. The formula is as follows:

Borax	1,800 c.c.	0.94
Ac. borac.	1,200 c.c.	0.63
Pot. nit.	7,000 c.c.	3.68
Aq.	121,000 c.c.	68.88
Thymol	30 c.c.	0.157
Ac. salc.	180 c.c.	0.94
Alcohol	25,200 c.c.	13.24
Formald.	1,800 c.c.	0.94
Ac. ars.	500 c.c.	0.26
Rock salt	15,000 c.c.	7.88
Carbolic	500 c.c.	0.26
Glycerin	16,000 c.c.	8.41

The second fluid above referred to is made by making a saturated solution of equal parts of nitrate of potash and arsenate of soda and adding to it equal parts of the following solution:

Borax	1,800 c.c.	
Boracic acid	1,200 c.c.	
Nitrate of potash	3,000 c.c.	
Water	57,000 c.c.	
Thymol	30 c.c.	
Salicylic acid	180 c.c.	
Alcohol	1,200 c.c.	
Formaldehyde	1,800 c.c.	

The solution then made is neutral in its reaction, and by the addition of 500 c.c. of glycerin will keep the body beautifully.

This solution has been practically tried out and has given very good results. Total amount of injection from 10,000 c.c. to 12,000 c.c. varying with the size and weight of the cadaver. Histological examination of the tissues will be reported later.

Anaphylactic Food Reactions in Dermatology.

ALBERT STRICKLER, M.D., AND JOSEPH M. GOLDBERG, M.D.

(From the Laboratories of the Philadelphia Polyclinic.)

This work was undertaken with the idea of throwing some light on the cause of various skin affections, particularly eczema, urticaria, and psoriasis. In the course of our work, we came to the following conclusions:

1. The anaphylactic food reactions, when properly interpreted, are a valuable guide in determining the dietary factors operative in the production of diseases of the skin.
2. These reactions we believe are specific.
3. The tests constitute a basis for the scientific regulation of diet in such cases.
4. In any case in which foodstuffs are suspected of being the cause of the pathologic condition present, the cutaneous tests offer a ready means of confirming or negativing the suspicion.
5. The tests must be carefully and conservatively interpreted in order that one be not deceived by pseudo reactions.
6. Further studies in these food reactions may shed considerable light upon the etiology of certain diseases of the skin.

November 11, 1915.

Complement-fixation in Acne Vulgaris.¹

ALBERT STRICKLER, M.D., JOHN A. KOLMER, M.D., AND
JAY F. SCHAMBERG, M.D.

(From the Laboratories of the Philadelphia Polyclinic.)

This work was undertaken with the hope of throwing more light on the etiology of acne vulgaris by means of complement-fixation tests. In the course of our work, antigens of the acne bacillus, of staphylococci from acne lesions and non-acneiform lesions and of colon bacilli from the feces of acne patients and normal persons were used with the sera of a large number of persons suffering with acne, non-acneiform skin diseases, and normal persons. The following conclusions were arrived at:

1. That the acne bacillus was causative in a large percentage of patients afflicted with acne, and was also a factor in acne rosacea and seborrheic dermatitis.
2. That the staphylococcus was also concerned in acne vulgaris, but in a lesser degree than the acne bacillus; fixation of comple-

¹ Published in full in the Journal of Cutaneous Diseases, February, March, 1916.
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ment with the staphylococci obtained from the pustules of acne in no way differed from that occurring with cocci obtained from abscesses.

3. The colon bacillus isolated from the feces of patients with acne showed a large percentage of positive complement-fixation reactions in acne vulgaris; the colon bacilli isolated from the feces of normal children tested out with the sera of patients with acne vulgaris showed a lesser number and a lesser degree of complement fixation.

Our work would seem to show, that in a certain percentage of cases the colon bacillus elaborated antigenic substances causing antibody productions in the serum of persons with acne vulgaris, and a vaccine is now employed by us along the lines suggested by our work in complement fixation. About this phase of the question we hope to report later.

November 11, 1915.

Complement-Fixation in Varicella.¹

JOHN A. KOLMER, M.D.

(From the McManes Laboratory of Experimental Pathology, of the University of Pennsylvania, Philadelphia.)

The object of this investigation was to determine if antibodies could be detected in the blood serum of persons actively infected with varicella, and after recovery, by means of complement-fixation tests, using as antigens extracts of the contents of the vesicles and crusts of the disease. Further than this it was considered of interest to study by means of complement-fixation experiments, the possible relationship between varicella and variola, purely on the basis of the close similarity between the diseases in so far as route of infection, the mechanism of the production of lesions and the clinical similarity of the lesions, are concerned.

SUMMARY OF RESULTS. 1. Of 28 sera from patients who presented the first evidences of varicella in from four to forty-two days prior to the tests, 11, or 39 per cent., reacted weakly positive with a salt solution antigen of varicella crusts.

2. Of 24 sera tested with a salt solution antigen of the contents of varicella vesicles, 7, or about 30 per cent., reacted weakly positive.

3. Negative reactions with both varicella antigens were generally observed with the sera of adult persons who had varicella in childhood. In varicella the Wassermann reaction is negative in the absence of syphilis.

4. The sera of several syphilitics yielding strongly positive Wassermann reactions reacted negatively with the varicella antigens.

¹ To be published in full in the Journal of Immunology, 1916, i, No. 1.

5. In all instances the degree of complement absorption with the sera of varicella patients and varicella antigens was slight (reactions weakly or doubtfully positive).

6. Cowpox and variola antibodies did not absorb complement with varicella antigens. The four weakly positive reactions observed with a salt solution extract of cowpox virus (calf) are to be ascribed to the presence of cowpox antibodies in the sera, similar results having been observed in a study of complement fixation in vaccinia and variola. The active sera of rabbits and calves vaccinated with cowpox virus yielded well-marked positive reactions with antigens of cowpox and variola material, but negatively with the antigen prepared of the contents of the vesicles of varicella. Inactivated rabbit sera (heated at 56° C. for thirty minutes) reacted positively not only with varicella antigen but also with the cholesterolized alcoholic extract of heart constituting examples of non-specific complement fixation sometimes found with normal rabbit serum and likely to be regarded as specific reactions. Negative reactions likewise occurred with the sera of eight persons suffering with a mild form of variola and an antigen of the fluid from varicella vesicles.

7. While these experiments have shown that an antibody in the nature of an amboceptor is present in the sera of persons suffering with varicella which will absorb complement in the presence of an antigen prepared of the cutaneous lesions of the disease, yet the percentage of positive reactions and particularly the degree of complement absorption is small; while immunity principles are in all probability present in the body fluids of persons for years after an attack of varicella, these could not be detected by the complement-fixation tests in this study; all positive reactions were observed during or soon after an attack of the disease and at the time of probable highest concentration of antibodies. A more delicate technic would probably yield a higher percentage of positive reactions as is usual in all complement-fixation tests with bacterial antigens, but in this study this was avoided in order to guard against the possibility of non-specific absorption of complement.

November 11, 1915.

Complement-fixation in Vaccinia and Variola.¹

JOHN A. KOLMER, M.D.

(From the Laboratories of the Philadelphia Hospital for Contagious Diseases and the Polyclinic Hospital and College for Graduates in Medicine.)

In this work antigens for the complement-fixation tests were prepared of the vesicles, pustules, and scabs of vaccinia, and of vaccine pulp from calves and from the contents of vesicles and pustules and the scabs of smallpox patients. With these antigens

¹ To be published in full in the Journal of Immunology, 1916, i, No. 1. *Digitized by Google*

complement-fixation reactions were conducted with homologous antigens and sera and the immunological relationship between vaccinia and variola studied by crossing the antigens and sera in complement-fixation experiments. The following sera were employed:

- (a) 17 from cases of smallpox.
- (b) 14 from persons who had been vaccinated with cowpox virus.
- (c) 2 from children who had never been vaccinated.
- (d) 7 from persons suffering with syphilis; vaccinated; never had smallpox.
- (e) 5 from vaccinated rabbits. These animals were inoculated in the skin of the back.
- (f) 2 from vaccinated calves. These animals were inoculated in the skin of the abdomen in the usual manner.
- (g) 1 from normal calves.

All sera were inactivated by heating at 56° C. for half an hour; the rabbit sera were used in complement-fixation tests both before and after inactivation.

SUMMARY. 1. The sera of rabbits inoculated with cowpox virus yielded positive complement-fixation reactions with salt solution antigens of cowpox and smallpox viruses in seven to eight day after vaccination.

2. The antibody of cowpox virus in the sera of vaccinated animals showed a distinct and close biological relationship to the antigen of variola in complement-fixation experiments.

3. Of 13 persons vaccinated with cowpox virus from seven to ten years previously and whose sera yielded negative Wassermann reactions, positive reactions with salt solution antigen of cowpox virus were observed with 4, or 22 per cent. The sera of one of those four persons yielding positive reactions (vaccinated eight, twenty-one, twenty-one, and twenty-four days previously) with cowpox virus, reacted positively with a salt solution antigen of variolous material. The sera of unvaccinated persons reacted negatively with all antigens.

4. Of 17 persons suffering with mild smallpox the sera of 9, or about 60 per cent., yielded positive complement-fixation reactions with salt solution antigens of variolous and cowpox viruses. While the degree of complement absorption was relatively weak in all instances the reactions were generally stronger with the variolous antigens than with the cowpox antigens.

5. Alcoholic extracts of variolous and cowpox viruses possessed little or no antigenic sensitiveness.

6. These complement-fixation reactions have demonstrated the close biological relationship between the antibodies of vaccinia and variola; it is probable that complement-fixation reactions with salt solution antigens of the contents of smallpox lesions or fresh cowpox virus will prove of some value in the diagnosis of smallpox.

**Summary of Chemotherapeutic Studies in Experimental
Trypanosomiasis.¹**

**JAY FRANK SCHAMBERG, M.D., JOHN A. KOLMER, M.D.,
AND GEORGE W. RAIZISS, PH.D.**

(From the Dermatological Research Department of the Philadelphia Polyclinic.)

In our investigations, the following four parasites were employed: the Spirochæta recurrentis (the parasite of relapsing fever), the Trypanosoma brucei (the parasite of Nagana disease of horses), the Trypanosoma lewisi (a saprophytic parasite in rats), and the Trypanosoma equiperdum (the parasite of la dourine or horse syphilis).

Of the various drugs employed by us, the only ones that were found capable of destroying the Trypanosoma equiperdum (and indeed, trypanosomes generally) in the blood of infected animals were those belonging to the arsenobenzol group, namely, salvarsan and neosalvarsan.

Mercury, copper, enesol, and sodium cacodylate in the maximum non-lethal dosage exerted no appreciable effect on the number of trypanosomes in the blood, or on the duration of life of the experimental animal. Scores of experiments were carried out with all of the well-known mercurial salts and with a number of new organic mercurial compounds made in our laboratory, but with the same results as were obtained with mercuric chloride. Iodin was likewise employed intravenously, but failed to exert any trypanocidal influence. We recognize that the failure of these substances to influence trypanosomiasis does not indicate that they are equally inefficacious in syphilis. Experimental trypanosomiasis is an overpowering infection in which the blood soon swarms with parasites which rapidly destroy life, unless a powerful trypanocidal drug is employed. The trypanosomes react in large measure to the influence of drugs, as do the spirochetes; the spirochete of relapsing fever, which is resistant to the drugs mentioned above, is readily destroyed by salvarsan.

We know, however, from clinical experience that mercury and the iodides exert a curative influence on the lesions of syphilis. Whether they do so by the formation of some intermediate product which exerts a noxious influence on the spirochetes, or whether they stimulate the formation of antibodies, or whether they act in some other manner, as yet unknown.

We have administered our arsenobenzol intravenously over 175 times without any accidents whatsoever. In a proportion of

¹ Published in full in the Journal of the American Medical Association, 1915, lxv, 2142.

cases such reactive symptoms of chilliness, headache, slight fever, nausea and occasionally vomiting may occur, but these pass away in the course of a few hours. The therapeutic results we believe to be indistinguishable from those obtained with the German product. A healing influence on lesions is often evident in from twenty-four to forty-eight hours.

Several hundred doses have been administered by others than ourselves, and the reports we have received correspond with our own observations.

November 11, 1915.

The Chemistry of Salvarsan.

GEO. M. RAIZISS, PH.D.

November 11, 1915.

Cell Changes in the Hypophysis of Animals after Gonadectomy.

WILLIAM H. F. ADDISON, M.D.

From the earliest times it has been known that removal of the sex glands in the young is followed by definite structural and functional changes. In 1905 Fichera showed that changes in the hypophysis also occur after gonadectomy. Recently Hatai, working on the albino rat at the Wistar Institute of Anatomy in this city, has found that in the male the weight of the hypophysis is increased on the average 50 per cent., and in the female only 8 per cent. on the average after removal of the sex glands. Previously (1913) he had found that the hypophysis of the adult female (200 gms. body-weight) is nearly double the weight of that of the male.

Histologically, similar cell changes are found in both sexes. The changes are in the distal glandular part (the part in man called pars anterior). Of the three types of cells found in this part of the rat hypophysis, one chiefly is affected. The three types are (1) chief cells, (2) acidophile cells, and (3) large pale-staining slightly basophilic cells. After gonadectomy cells of type (3) enlarge and acquire a large vacuole-like space, filled with a colloid-like secretion. The nucleus is flattened against the wall of the cell. The cytoplasm forms the peripheral ring and the greatest part of the cell is constituted by the colloid-like-containing space. By the presence of these cells one can readily distinguish the hypophysis of a castrated or splayed animal from that of a normal rat in several weeks after the operation.

December 2, 1915.

Echinococcus Cyst of the Kidney.

JOHN B. DEAVER, M.D., AND F. R. BARNES, M.D.
December 2, 1915.

Squamous-cell Carcinoma of the Kidney.

JOHN B. DEAVER, M.D., AND F. R. BARNES, M.D.
December 2, 1915.

Hydrops of the Appendix.

JOHN B. DEAVER, M.D., AND F. R. BARNES, M.D.
December 2, 1915.

The Use of Plaster of Paris as a Medium for Mounting Museum Specimens.¹

FRED. D. WEIDMAN, M.D.

The value of this medium was brought our first as an embedding agent in connection with maintenance of proper sequence of serial tissue slabs (hemorrhages of brain, corpora lutea of ovary) and with soft tissues not permitting use of ligatures on account of tearing out (brain); and secondly as a backing for pushing and holding a specimen against face of container in those cases where view of both sides of specimen was not essential. Such backings made by pouring plaster of Paris cream into container while flat on face (filling container only one-third full), allowing to harden while still on face, followed by separation of the backing from face and insertion between the two of specimen to be mounted. Specimens held securely by packing absorbent cotton behind the backing. If specimen be white, black paper background may be inserted. It is specially useful for parasitic worms. Advantages: (1) no fluid between specimen and eye to become turbid or distort specimen, so that finest features are clearly visible; (2) cannot become dismounted; (3) obviates necessity of use of gelatin as adhesive and embedding agent and so permits better subsequent microscopic examination; (4) face of container can be marked *exactly* at any special feature. (Useful for student demonstration.) If specimen be thick and soft (larvæ) crushing is avoided by making hollow in backing to receive specimen.

¹ Reported in full in the Journal of the American Medical Association, 1915, xlv, 1634-1637.

The use of hermetically sealed tubes was also shown for use where the specimen was small and of fairly globular form (small bladder worms). Ordinary glass tubing, 4 to 8 mm. bore, is sealed in flame at one end, cooled and partly filled with mounting medium. A short length of snugly fitting glass rod is added as a base for the specimen, which is now added. Level of fluid adjusted 2 cm. below open end, which is now *rapidly* sealed in oxyhydrogen flame. After cooling, the tube is inserted in a support. *December 2, 1915.*

The Importance in the Production of Hemolytic Jaundice of the Path of Hemoglobin to the Liver.

J. HAROLD AUSTIN, M.D., AND O. H. PERRY PEPPER, M.D.

These experiments indicate, therefore, that when hemoglobin is set free in the portal circulation a larger amount is held by the liver and converted rapidly into bile pigment than is the case when it is set free in the general circulation, and that, under the former condition, overloading of the liver with bile pigment more readily occurs, and jaundice is more apt to develop.

This mechanical influence must, therefore, be a factor in the lessened tendency after splenectomy to the jaundice which follows blood destruction due to hemolytic agents, for whether the spleen be an active factor in destroying the erythrocytes or whether it plays merely a passive part as a place for the deposition of the disintegrating cells, there can be no question that in this organ, when it is present, a large number of cells undergo their final disintegration after the action of hemolytic poisons, and that the hemoglobin there liberated passes by the portal system directly to the liver. When the spleen is removed, this disintegration occurs in other organs, notably in the lymph nodes and bone marrow, and the hemoglobin from these organs passes not into the portal but into the general circulation, from which it reaches the liver more gradually and in a more dilute form. *December 2, 1915.*

The Prognostic Value of the Urochromogen Reaction in Pulmonary Tuberculosis.

M. E. COWEN, M.D.

1805 specimens of urine from 832 patients at Cresson State Sanatorium were examined. These patients were classified according to physical condition as follows: 326 far advanced, 399 mod-

erately advanced, 107 incipient. Of these, 91 (78 far advanced, 13 moderately advanced), had a positive reaction on one or more occasions. Their hospital records were carefully examined for evidence of increased activity of the disease and it was found that in nearly all cases there had been an increased amount of fever and loss of weight within the month previous to the appearance of the positive reaction. In many of the cases it was possible to find signs of extending cavity formation or areas giving those physical signs where they had not previously existed.

A few cases became negative after varying periods of time, and in all these the charts showed diminished activity, and gain in weight with improvement in the lung condition.

For these reasons it appeared that the positive reaction is to be found in pulmonary tuberculosis only when there is an actual destructive process going on. The significance of the continued positive reaction is very grave. 93 per cent. of the far-advanced cases in this series died within four months and the majority of these within three months from the first appearance of the reaction.

On the other hand a continued negative reaction in a urine that has previously been positive appears to indicate at least a temporary cessation or retardation of activity. *December 2, 1915.*

Simple Splenomegaly.

JOHN B. DEAVER, M.D., AND F. R. BARNES, M.D.

December 2, 1915.

On the Limit of Assimilation of Glucose.

A. E. TAYLOR, M.D., AND F. N. HULTON.

The commonly given figure for the limit of assimilation of glucose administered by mouth, 150 to 200 grams, has never been tested in experiments done on a large scale. We have administered ascending doses of pure glucose to healthy males (students) with the following results, based on some forty tests:

The normal healthy male is almost always able to ingest 200 grams of glucose on the empty stomach without glucosuria in the following twenty hours.

The majority of healthy males can similarly ingest 300 grams.

Of the men who are able to ingest 300 grams without production of glucosuria, two-thirds can ingest 400 grams without glucosuria.

Beyond the administration of 400 grams of glucose on the empty stomach it is not possible to go, the bulk becomes excessive.

The concentration of glucose in the blood is not increased beyond the range of normal limit by the administration of even 400 grams of glucose on the empty stomach.

For the majority of healthy males, there is no such thing as a limit of assimilation of glucose within the limits of practicable administration.

December 16, 1916.

Torsion of the Normal Tube and Ovary.

GEO. W. OUTERBRIDGE, M.D.

Torsion of an ovarian tumor upon its pedicle is, of course, an not at all uncommon occurrence. Torsion of a pyosalpinx, in the absence of any ovarian neoplasm, is much more unusual, but does occur every now and then, something over 90 cases being on record. Torsion of the normal adnexa, however, must be considered an exceedingly rare occurrence, and some authors, indeed, deny its possibility. In the case here presented, however, no evidence of the existence of a previous lesion can be found; in this connection, an almost exactly parallel case recently reported in England by Barrington,¹ is of considerable interest.

The history of the case here presented was briefly as follows: The patient is thirty-four years of age and has had one child. About one year ago she began having pain in the lower abdomen, generally dull in character, but with occasional attacks of very sharp pain, lasting for two or three days at a time. During these attacks the pain was often excruciating, and was not relieved by any posture the patient could assume. Intervals of several weeks sometimes occurred without pain; there was no relation between the attacks of pain and the menstrual periods. No menorrhagia. On examination a hard mass was felt in the lower abdomen, just to the left of the midline. At operation, both tubes were found to be twisted, the left much more markedly than the right. The specimen consists of the right tube, and the left tube and ovary. The left tube is swollen to two or three times its normal size, is purplish-black in color, and shows on microscopic section merely a thin shell of fibrous tissue filled with a solid mass of blood, all traces of plicæ having disappeared. The fimbria, however, are well preserved, although enormously swollen and congested. The abdominal ostium is patulous. The ovary consists likewise merely of a thin fibrous sac, several times the size of the normal ovary, containing grossly and microscopically merely a mass of blood-clot, with no trace of ovarian stroma. The enlargement here can easily be explained by the enormous extravasation of blood. The right tube shows apparently

¹ Journal of Obstetrics and Gynecology of the British Empire, 1915, xxvii, 141.

a much earlier stage of the same process—here the anatomical structure is well preserved, but the walls and plicæ show considerable edema, congestion, and interstitial hemorrhage, with a slight amount of round-cell infiltration. The tube is not appreciably increased in size, and there is no gross discoloration.

December 16, 1915.

Bacteriological and Immunological Studies on Recurrent Infections.

HERBERT FOX, M.D.

Preliminary work in the study of treatment of subacute infections, especially of "viridans" endocarditis. Attempt to discover the reason of fixed or fast character in endocarditis by the study of immunity reactions, phagocytosis, and complement fixation. Work seems to indicate that there is an independence of action of the serum antibodies and phagocytes, that they are not adjusted to the need of the body and the chief deficiency is in the activity of the phagocytes and not in serum antibodies. This is in line with the conclusions of Rosenow upon staphylococcus and pneumococcus endocarditis.

December 16, 1915.

The Resistance to Hemolytic Agents of Dogs in Which the Splenic Blood has Been Diverted from the Liver.

EDWARD B. KRUMBHAAR, M.D., AND JOHN H. MUSSER, JR., M.D.

(From the John Herr Musser Department of Research Medicine of the University of Pennsylvania, Philadelphia.)

1. Dogs whose splenic veins or portal vein (Eck fistula) have been transplanted into the inferior vena cava, or whose splenic veins have been ligated, show a lessened tendency to jaundice similar to that exhibited by splenectomized animals.

2. Although the previously existing anemia and the concomitant increased resistance of the red cells of these animals are undoubtedly factors in the greater resistance to hemolytic agents, the lessened tendency to jaundice is, in part at least, due to a mechanical factor dependent on the course of the blood supply to the liver.

3. The additional anemia caused in the test animals by hemolytic agents is usually less than in the controls, although the total fall from the original normal may be greater. This applies to the splenectomized as well as the other test animals and is a modification of our former statements in regard to the severity of the anemia in splenectomized dogs.

4. Although the destruction of blood in these animals is less than in the normal controls, the repair of the same takes considerably longer than in the controls. This confirms similar results previously obtained in splenectomized animals.

5. The white cells exhibit much the same changes as they do following the administration of hemolytic agents to splenectomized or normal animals. As these changes are not unlike those following uncomplicated splenectomy or the operations here discussed, they cannot be considered as characteristic of any of the above procedures, but perhaps as an accompaniment of any temporary increased blood destruction.

6. The reaction of test and control animals is substantially the same, whether the jaundice is caused by toluylenediamin or hemolytic immune serum.

December 16, 1915.

**Changes in the Blood following Diversion of the Splenic Blood
from the Liver. A Control Study of the Effects of
Splenectomy.**

EDWARD B. KRUMBHAAR, M.D., JOHN H. MUSSER, JR.,
M.D., AND MAX M. PEET, M.D.

(From the John Herr Musser Department of Research Medicine of the University
of Pennsylvania, Philadelphia.)

1. In dogs whose splenic veins have been ligated or transplanted into the inferior vena cava, or in which an Eck fistula has been made, an anemia occurs which resembles that following splenectomy and shows the same general variation in degree and duration.

2. The resistance of the red cells to hypotonic salt solution is quickly increased, sometimes coincident with and sometimes preceding the anemia. As a rule, it gradually returns to normal in about the same length of time as it takes the anemia to disappear, but may remain increased for longer periods.

3. There is an initial leukocytosis, involving at first the polymorphonuclear leukocytes and transitional cells. As the total leukocytosis diminishes there is both a relative and actual increase of small lymphocytes and usually of eosinophiles. This may either be temporary or last during the rest of the period of observation and differs from the ordinary postoperative leukocytosis.

4. Ligation of the splenic vein is followed by considerable atrophy of the spleen, but not by necrosis or thrombosis. There is rarely adequate new vein formation. The other operations cause little or no change in the spleen.

5. Whether the disturbances as described are due to the loss of a certain volume of blood to the liver, or, as has been previously

suggested, to the loss of a splenic hormone, it is impossible to say. If the former is true, the method of production of the anemia still remains unexplained. It is evident, furthermore, that the latter theory has also no value unless it is assumed that this hormone must be activated by passage through the liver. *December 16, 1915.*

Early Rupture in Tubal Pregnancy.

FLOYD E. KEENE, M.D.

December 16, 1915.

Stricture of the Upper Portion of the Ureter with Hydronephrosis.

FLOYD E. KEENE, M.D.

December 16, 1915.

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